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PROCEEDINGS
OF THE
Bournemouth Natural Science Society.

BRITISH MUSEUM NATURAL HISTORY

VOL. X.

SESSION 1917-18.

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Introductory Note.

THE BOURNEMOUTH NATURAL SCIENCE SOCIETY was founded in 1903, being the successor to an older society which was formed in 1883 and dissolved in 1897. Its objects are declared by the second of its rules to be "the promotion of the study of Science in all its branches, by means of Lectures, Field Meetings, the Reading and Discussion of Papers, and the formation of Sections of its members devoted to any particular branch of the Society's work."

The Sections at present working are as follows:—**Archæological and Historical, Botanical, Entomological, Geographical, Geological, Microscopical and Zoological, Photographical, and Physical.**

During the WINTER SESSION, from October to April, GENERAL and SECTIONAL MEETINGS are held. TWO GENERAL MEETINGS are usually held in each month, comprising Lectures and Demonstrations on various subjects of scientific interest, illustrated by lantern slides, diagrams, or specimens.

SECTIONAL MEETINGS.—Each Section usually holds a meeting once a month. At these meetings the papers read are more specialized and technical than at the General Meetings.

Meetings, as a rule, have been held in the Society's Room in the Municipal College, but sometimes at Trinity Hall, Lorne Park.

Throughout the Summer Session, EXCURSIONS to places of interest in the neighbourhood are arranged as far as the present restricted travelling facilities permit.

The management of the Society is vested in a Council, which is elected at the Annual General Meeting, held in October.

The Society possesses a LIBRARY available for the use of Members. This is yearly becoming more extensive and valuable by the acquisition of standard text-books and of books dealing with matters of local scientific interest. Further particulars will be found in the article on "The Society's Library" in the present volume.

The Society is endeavouring to lay the foundations of a MUSEUM by acquiring collections of archæological, botanical, geological, zoological, and other specimens of scientific interest. A good beginning has already been made in several directions, especially by the acquisition of the valuable Dent Collection of Barton Fossils. Particulars as to the objects and hopes of the Society in this connection and the measure of success already attained will be found in the special articles contributed by Sir Daniel Morris to Vol. V. and by Mr. W. G. Wallace to Vol. X. (the present number) of the Society's proceedings.

Members are elected by the Council and pay a (minimum) annual subscription of Ten Shillings for full membership (admitting to all meetings and excursions for the year)· Visitors to Bournemouth are permitted to join for the Winter or Summer Sessions on payment of Seven Shillings and Sixpence, if approved by the Council.

As the Society's tenure of its present room will shortly terminate it has become imperatively necessary to increase the annual income so as to meet the cost of providing new and commodious premises and to extend in various directions the work of the Society. To further this object members are requested to supplement the minimum subscription mentioned above by a voluntary one. Special donations to the general funds of the Society, or earmarked for a specific purpose, are also invited and should be sent to the Hon. Treasurer.

A Monthly Notice, giving full details of all meetings, etc., is posted to every member before the beginning of each month, and a volume of Proceedings is published every year.

Application Forms for Membership, and further particulars, can be obtained from the

HON. SECRETARY,
Bournemouth Natural Science Society,
Municipal College,
Bournemouth.

Bournemouth Natural Science Society.

OFFICERS AND COUNCIL FOR 1918–19.

President:

Field-Marshall Lord Grenfell of Kilvey, G.C.B., G.C.M.G., LL.D., F.S.A.

Vice-Presidents:

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Dr. G. E. J. Crallan, M.A., M.B., M.R.C.S.
S. McCalmont Hill, D.C.L.
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Rev. E. F. Linton, M.A., F.L.S.
Claude Lyon
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Dr. W. T. Ord, F.G.S.
Hubert Painter, B.SC., F.C.S.
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Dr. A. Ransome, M.A., M.D., F.R.C.P., F.R.S.
R. V. Sherring, F.L.S.
Rev. Hy. Shaen Solly, M.A.

Chairman of Council:

Sir Daniel Morris, K.C.M.G., J.P., M.A., D.SC., D.C.L., LL.D., F.L.S.

Deputy-Chairman of Council:

Dr. F. G. Penrose, M.D., F.R.C.P., F.Z.S., M.B.O.U.

Council:

The Officers (ex-officio) and

Henry Backhouse, F.R.H.S.
J. M. French.
Dr. Wm. Gosse, M.D., D.P.H.
T. J. P. Jeffery.
Joseph Neale, B.A.
W. Munn Rankin, M.SC., B.SC.
Mrs. Rothwell
J. H. Scott, M.E., M.I.M.C.E.
R. V. Sherring, F.L.S.
J. H. Ralph Smythe, J.P.
F. B. Taylor, B.A.
W. J. Woodhouse, A.C.P.

Chairmen of Sections:

Archæological and Historical: Rev. H. Shaen Solly, M.A.
Botanical: Rev. C. O. S. Hatton, B.A., F.L.S.
Entomological: F. G. Penrose, M.D., F.R.C.P., F.Z.S., M.B.O.U.
Geographical: Claude Lyon.
Geological: W. Munn Rankin, M.SC., B.SC.
Photographical and Record: R. Y. Banks.
Physical: Hubert Painter, B.SC., F.C.S.
Zoological and Microscopical: F. G. Penrose, M.D., F.R.C.P., F.Z.S., M.B.O.U.

Hon. Treasurer:

George Brumell, A.R.I.B.A.

Secretaries:

Hon. Secretary: R. A. de Paiva, San Remo, 13, Carysfort Road, Bournemouth.
Hon. Assistant Secretary: Dr. Wm. G. Boul, M.A., LL.D., D.C.L., 45, Lowther Road, Bournemouth.
Assistant Secretary: J. F. Spencer, Glenthorne, 73, Richmond Park Road, Bournemouth.

Hon. Librarian:

Henry J. Ellis.

Hon. Curator:

W. G. Wallace.

Hon. Editor:

Hubert Painter, B.SC., F.C.S.

Hon. Auditors:

E. Bicker. C. H. Blackett.

Bankers:

National Provincial Bank of England, Bournemouth.

Past Presidents:

1903-4	J. E. Beale (Mayor of Bournemouth).
1904-5—1905-6 .	G. E. J. Crallan, M.A., M.B., M.R.C.S.
1906-7	H. J. Waddington, F.L.S.
1907-8—1908-9 .	Dr. A. Ransome, M.A., F.R.C.P., F.R.S.
1909-10	Dr. A. Smith Woodward, LL.D., F.R.S., F.L.S., F.G.S.
1910-11	Dr. Dukinfield H. Scott, M.A., LL.D., F.R.S., F.L.S., F.G.S.
1911-12—1912-13	Sir E. Ray Lankester, K.C.B., M.A., LL.D., F.R.S., F.L.S.
1913-14—1914-15 —1915-16 ...	Sir Daniel Morris, K.C.M.G., J.P., M.A., D.SC., D.C.L., F.L.S.
1916-17	The Rt. Hon. The Earl of Malmesbury, D.L., J.P.
1917-18	Sir Jethro J. H. Teall, M.A., D.SC., LL.D., F.R.S.

Annual Meeting, 1918.

THE Fifteenth Annual General Meeting was held in the Society's Room in the Municipal College on Saturday, October 26th. Mr. W. Munn Rankin, M.Sc., B.Sc., Chairman of the Council, presided. The Minutes of the previous Annual Meeting having been read and passed, the Council's Report and the Hon. Treasurer's statement of accounts were read. The latter showed receipts £309 7s. 11d., and payments £226 1s., leaving a balance of £83 6s. 11d.

The Council's Report indicated that in the past year the Society had continued its career of activity and usefulness. The number of Members on September 30th was 458, as compared with 394 on the same date last year. Four lectures on the subject of the war were given under the auspices of the National War Savings Committee, for which a small charge was made to non-members, leaving a profit of £3 3s., which was invested in War Savings Certificates. A branch of the local War Savings Association has been formed, to be called "The Bournemouth Natural Science War Savings Association." The amount invested up to October 24th was £3,163 15s.

A sub-committee, of which Mr. Geo. Grace, B.Sc., A.R.C.Sc., is Chairman, has been appointed to effect improvements in the administration of the library.

On June 8th a Reunion of this Society and the Literature and Art Association was held in the Municipal College, when selections from the Society's collections and many other objects of interest lent for the occasion were adequately displayed. It was very successful, and was attended by a large number of Members.

Allusion was made in the report to a munificent bequest to the Society, under the will of the late Mr. G. R. MacDougall, of £2,000, for the purposes of a Museum, including the site. It is at present subject to the life interest of a beneficiary, but it will eventually enable a better display to be made of the Society's numerous collections.

The Report and accounts were approved and adopted.

The Chairmen of the various sections gave their reports, and Mr. Grace read the report of the Library Committee.

A vote of thanks to the retiring President, Sir Jethro J. H. Teall, M.A., D.Sc., LL.D., F.R.S., was proposed by the Chairman, seconded by Mr. Grace, and carried.

Sir Daniel Morris, K.C.M.G., J.P., etc., proposed the election of Field Marshal Lord Grenfell, of Kilvey, G.C.B., G.C.M.G., LL.D., F.S.A., as President of the Society for the year 1918-19. He spoke of his services to the Country as a distinguished soldier, while at the same time having been able to devote some time and attention to archæological research. Mr. W. A. Willes seconded, and it was carried unanimously.

The officers of the Society were then re-elected, and also the elected Members of the Council, of whom there are nine at present.

The Rules of the Society provide that there shall be twelve elected Members, the three vacancies being filled by the election of Mrs. Rothwell, Dr. Wm. Gosse, M.D., D.P.H., and Mr. F. B. Taylor, B.A.

Two additional Vice-Presidents were elected, viz., Mr. Claude Lyon and the Rev. Hy. Shaen Solly, M.A., and the other Vice-Presidents were re-elected.

The Hon. Auditors, Mr. E. Bicker and Mr. C. H. Blackett were re-elected, and a vote of thanks was passed to them for their past services.

A vote of thanks to the Chairman closed the proceedings.

Council's Report for 1918.

THE Fifteenth Annual General Meeting affords the Council the opportunity and pleasure to report again another year of activity and success.

There has been a considerable increase in the Membership, the number of Members on September 30th being 458, as compared with 394 on the same date last year.

During the year General and other Meetings were held as follows, viz. :—

	Annual Meeting
	Presidential Address
	Scientific and Literary Reunion
	Inaugural Meeting of the B.N.S.S. War Savings Association
8	General Lectures
49	Sectional Lectures
4	General Excursions
13	Sectional Excursions

making a total of 78 Meetings and Excursions.

General Lectures were as follows:

1917.

Dec. 1.—Presidential Address by Sir Jethro J. H. Teall, M.A., D.Sc., LL.D., F.R.S. Subject, "Some Aspects of Egyptian Geology."

Dec. 8.—"War in the Air," by Mr. C. G. Grey, Editor of the "Aeroplane."

Dec. 15.—"The Mistletoe," by Sir Daniel Morris, K.C.M.G., D.Sc., D.C.L., etc.

1918.

Jan. 2.—"War at Sea," by Mr. Edwd. Noble.

Jan. 19.—" Our remote Ancestors," by Mr. Frank Stevens, F.S.A., curator of the Salisbury Museum.

Feb. 6.—" The War on Land," by Mr. Draycott M. Dell.

Feb. 16.—" The Invasion of England," from Cæsar to Kaiser (B.C. 55 to A.D., 1915), with special reference to the district of Dorset and Hants in the Napoleonic Era. The Story of National Defence, by Mr. Harry Pouncy.

March 6.—" Money behind the Guns," by Mr. Hartley Withers, Editor of " The Economist."

Mar. 16.—" Among the Wild Savages of Papua," by Mr. Jas. E. Liddiard, F.R.G.S.

All were illustrated by Lantern Slides.

June 8.—Scientific and Literary Reunion.

The series of four War Lectures was given under the auspices of the National War Savings Committee, and each Lecture was delivered by Mr. R. Y. Banks, Chairman of the Photographic and Record Section. A small charge was made to non-members; a profit of £3 3s. was realised, which was invested in War Savings Certificates.

The Sectional Meetings and Lectures were:—

In the Archæological and Historical Section.

1917.

Nov. 13.—An Exhibition of objects of Archæological and Historical Interest lent by Members.

Dec. 12.—" The Ancient Earthworks of the New Forest,' by Mr. Heywood Sumner, F.S.A.

1918.

*Jan. 30.—" Along the Dorset Heights in the Track of Early Man," by Mr. Hy. Kidner, F.G.S. (Archæological and Geological).

*Feb. 14.—" Early English Miracle and Mystery Plays," by Rev. Hy. Shaen Solly, M.A.

March 9.—" Reminiscences of Egyptian Exploration," by Field Marshal Lord Grenfell, G.C.B., G.C.M.G., LL.D., F.S.A.

*March 21.—" The Makers of the Ancient Ridgeways and their Civilisation," by Mr. Hy. Kidner, F.G.S.

*April 3.—" Mediæval Builders," by Rev. Hy. Shaen Solly, M.A.

Oct. 19.—" Recent Archæological additions to our Sections," by Rev. Hy. Shaen Solly, M.A.

In the Botanical Section.

1917.

*Nov. 3.—" Vegetable Galls," by Miss C. Agnes Rooper, read for her by Mr. E. Dodshon, LL.B.

1918.

*Feb. 20.—" Trees in English Literature," by Mr. E. Dodshon, LL.B.

March 12.—Wild Flower Exhibition arranged by Miss C. Agnes Rooper and other ladies.

April 13.—Wild Flower Exhibition arranged by Miss C. Agnes Rooper and other ladies.

April 24.—" The British Oak," by Rev. Geo. Sampson, M.A.

*Oct. 31.—" Sagacity in Plants," by Rev. C. O. S. Hatton, B.A.

In the Entomological Section.

1917.

Nov. 8.—" The Distribution of Gnats and Mosquitoes."

Dec. 6.—Exhibition of Butterflies and Moths taken at Bridport by Mr. W. Parkinson Curtis, F.E.S., with an explanation of their Geological distribution.

1918.

Jan. 17.—Exhibition of Specimens of interest. Report on the progress of the Investigation of Anopheles.

Feb. 21.—Exhibition of Specimens of interest. Report on the progress of the Investigation of Anopheles.

March 21.—Exhibition of Specimens of interest.

April 18.—Exhibition of Specimens of interest.

June 6.—Exhibition of Specimens of interest.

July 4.—Discussion on Insects injurious to Garden Crops and Fruit Trees.

Oct. 10.—Discussion on the Report for the S.E.U. of Natural Science Societies on the Distribution of Anopheles in the Bournemouth District.

In the Geographical Section.

1917.

*Nov. 24.—"The Pompeii of North Africa" and scenes on the way to it, by Mr. Claude Lyon.

1918.

*Jan. 26.—"Some Regional Capitals in England," by Mr. C. B. Fawcett, B.Litt., M.Sc., F.R.G.S.

*Feb. 9.—Exhibition of Slides made by Mr. Banks from negatives of Egypt, presented to the Society by Mrs. Philpott—explained by Mr. Claude Lyon.

*April 17.—"Eastern Dorset in Saxon Days," by Rev. A. C. Almack, M.A.

*April 20.—"The New Forest, its History and Natural History," by Rev. J. E. Kelsall, M.A.

*Oct. 12.—"The Crimea as I saw it, and Scenes on the way to it," by Mr. Claude Lyon.

In the Geological Section.

1917.

Nov. 21.—Discussion on "The Origin of Mountain Folds," opened by Mr. T. J. P. Jeffery.

*Dec. 5.—"The Deposits of Coal and Iron in the Franco-German Borderland—Belgium, Luxembourg and Lorraine," by Mr. W. Munn Rankin, M.Sc., B.Sc.

1918.

*Jan. 9.—"The Origin of the Flora of Bournemouth District," by Mr. Munn Rankin, M.Sc., B.Sc. (Geological and Botanical).

*April 27.—"The Local Artesian Boring down to the lower Chalk," by Mr. Geo. Brownen, F.C.S.

*May 11.—"Evolution of Igneous Rocks," by the President, Sir Jethro J. H. Teall, M.A., D.Sc., LL.D., F.R.S.

In the Photographic and Record Section.

1918.

*Jan. 23.—"The Year's Work," by Mr. R. Y. Banks.

*Feb. 27.—"Photographic Memories of Italy," by Mr. R. Y. Banks.

*March 27.—"Markenfield Hall and Fountains Abbey," by Mr. E. Dodshon, LL.B.

*April 10.—Exhibition of the "Amateur Photographer" Prize Slides 1917, by Mr. R. Y. Banks.

In the Physical Section.

1917.

*Nov. 17.—"Soap," by Mr. Hubert Painter, B.Sc., F.C.S.

1918.

Jan. 12.—"The Wonders of Wireless Telegraphy," by Rev. L. Winther Caws.

Feb. 23.—"Dust," by Mr. F. I. Cooke, read for him by Mr. Geo. de Castro, M.R.C.S.

March 2.—"The Composition of Natural Waters," by Mr. Geo. Grace, B.Sc., A.R.C.Sc.

March 2.—"Some Analyses of Local Waters," by Mr. A. J. Tyrrell.

May 4.—"The Electrical Discharge," by Rev. L. T. Garland, M.A., and Mr. C. H. Woodward, A.M.I.E.E.

In the Zoological Section.

1917.

*Dec. 13.—"The Colour of Insects," by Mr. Geo. Grace, B.Sc., A.R.C.Sc.

1918.

*Jan. 16.—"Gnats and Mosquitoes," Part I., by Mr. T. B. Goodall, F.R.C.V.S., F.L.S.

Feb. 28.—Microscopical Meeting. (Zoological and Microscopical).

*March 14.—"Gnats and Mosquitoes," Part II., by Mr. T. B. Goodall, F.R.C.V.S., F.L.S.

April 24.—"The Oyster, its history, structure, life and use," by Dr. Wm. Gosse, M.D., D.P.H.

*Oct. 17.—"The Falcons, Hawks, etc., on the British List," with specimens, by Dr. F. G. Penrose, M.D., F.R.C.P., F.Z.S., M.B.O.U.

* Illustrated by Lantern Slides.

Several expeditions have been made by small parties of Entomologists to investigate the local distribution of Anopheles.

The Excursions have necessarily been limited owing to War conditions.

There were four General Excursions, and their conductors were as under:—

1918.

June 5.—Walk through the Bournemouth Pleasure Gardens, Mr. Claude Lyon and Mr. H. Backhouse, F.R.H.S.

July 10.—Visit to Mr. Walter Child Clark's Rose Garden.

Aug. 8.—Corfe Castle, Mr. Harry Pouncy, Assistant Hon. Secretary to the Dorset Field Club.

Sept. 14.—Poole Museum and Park, Mr. E. R. Gill, A.R.C.A., Curator of the Museum.

The Excursions in the various Sections and their Conductors were:—

1918.

May 10.—Hinton Admiral, Mr. W. Munn Rankin, M.Sc., B.Sc., Botanical.

June 1.—The Haven, Poole Harbour, Mr. W. Munn Rankin, M.Sc., B.Sc. Botanical.

June 15.—Hengistbury Head, Mr. W. Munn Rankin, M.Sc., B.Sc., Botanical

June 22.—Sopley Church and Park, Mr. E. Dodshon, LL.B. Photographical and Archæological.

June 29.—Honeycombe Chine, Mr. W. Munn Rankin, M.Sc., B.Sc. Geological.

July 6.—"Shalimar," through Branksome Park, Mr. Claude Lyon. Geographical.

July 13.—Hurn Common, Mr. W. Munn Rankin, M.Sc., B.Sc. Botanical.

July 20.—Guss Common, Rev. C. O. S. Hatton, B.A. Botanical.

Aug. 1.—Chewton Bunny and Barton Cliffs, Mr. Hy. Kidner, F.G.S. Geological.

Aug. 3.—Sandbanks, Mr. W. Munn Rankin, M.Sc., B.Sc. Botanical.
Aug. 14.—Government Saw Mill, Rev. C. O. S. Hatton, B.A. Botanical.
Aug. 24.—Holmsley, Rev. C. O. S. Hatton, B.A. Botanical.
Sept. 26.—Fungus Foray in Talbot Woods, Mr. J. F. Rayner, F.R.H.S. Botanical.

The Wild Flower Show in the Vestibule of the Public Library, initiated by the late Miss C. Agnes Rooper, has attracted much attention, and has been the means of affording valuable information to Students of Botany. The flowers were chiefly arranged by Mrs. Rothwell, assisted on critical points by Mr. H. E. Swain.

At the last Annual Meeting held in the Society's Room, Municipal College, on October 27th, Sir Jethro J. H. Teall, M.A., D.Sc., LL.D., F.R.S., was unanimously elected President for the year. He gave his Presidential Address on December 1st, and lectured before the Geological Section on May 11th. It is a pleasure to be able to state that Field Marshal Lord Grenfell has kindly consented to be President for the year 1918-19.

The Congress of the South-Eastern Union of Scientific Societies was held in London in June. Dr. Penrose, M.D., F.R.C.P., F.Z.S., M.B.O.U., attended as Delegate from the Society.

The Council has the pleasure to record that the University of Wales has conferred upon Sir Daniel Morris, K.C.M.G., J.P., M.A., D.Sc., F.L.S., the degree of LL.D. Honoris causâ. The Society is to be congratulated on the reflection of this distinction conferred on one who has taken so keen an interest in its welfare, and done so much to further its development.

In February a branch of the local War Savings Association was formed, to be called the Bournemouth Natural Science Society War Savings Association. The amount invested up to 24th October was £3,163 15s., of which £2,000 was contributed by one Member.

On June 8th a Scientific and Literary Reunion of this Society and the Literature and Art Association was held in the Municipal College; this was the first time such a function had taken place. It was very successful, and was attended by a large number of Members and friends of both bodies. Selections from the Society's collections and numerous other objects of interest lent for the occasion were adequately displayed, while descriptions were given by those in charge of the Exhibits.

Among the Exhibits may be mentioned a fine collection of Books showing the Evolution of Printing from the 15th to the 20th Centuries, lent by Mr. Ernest Cooper, Pre-Reformation Prayer Books of the Laity, and other works shown by Col. Ranshaw and Members of the Literature and Art Association.

During the afternoon, Mr. C. H. Woodward, A.M.I.E.E., gave a demonstration on Electrical Discharges and X-Rays, which proved very attractive. A short lecture was given by Dr. F. G. Penrose, M.D., F.R.C.P., F.Z.S., M.B.O.U., on behalf of Mr. T. B. Goodall, F.R.C.V.S., F.L.S., who was prevented from coming, on "Types of Dentition," which was illustrated by numerous specimens collected and prepared by Mr. Goodall himself, and which he has since presented to the Society. Also a short lecture by Mr. Jos. Neale, B.A., on "The Colour of Beetles," illustrated by large coloured diagrams.

A Committee, of which Mr. Grace, B.Sc., A.R.C.Sc., is Chairman, has been appointed to effect improvements in the administration and arrangement of the Library. The Council has decided that £20 in the current year shall be expended on the purchase of Scientific books, and this sum has been spent during the past year.

Considerable progress has been made by the Hon. Curator, Mr. W. G. Wallace, in labelling, repairing and preparing lists of the numerous scientific collections in the possession of the Society. When better opportunities for their display can be obtained, this work will be of the greatest value.

A generous and handsome gift has been made to the Society under the Will of the late Mr. Geo. Rogers MacDougall, of £2,000 for the Establishment of a Museum, including the site. It is subject at present to the life interest of a beneficiary, but it will eventually enable the Society to make a better display of its collections. It is earnestly hoped that other friends of the Society may be stimulated to follow his example.

Dr. J. E. G. Crallan, M.A., M.B., M.R.C.S., one of our former Presidents, now living in Jersey, has notified the Council that he has provided in his Will to leave to the Society his collection of Butterflies and Moths in two Cabinets. He would have sent these over at once but for the risks of damage in transit.

Mr. T. B. Goodall, F.R.C.V.S., F.L.S., offered his wonderful Osteological Collections in their entirety, but the Council was reluctantly obliged to decline this magnificent offer owing to lack of cabinet accommodation. He has most generously allowed the Society to retain selections from this collection.

The Council regrets to record the death of Miss C. Agnes Rooper after a very short illness. She was a prime mover in the re-foundation of the Society in 1903, a Member of the Council, Chairman of the Botanical Section for eleven years, and also a Vice-President. She was Education Secretary of the Victoria League, and an active supporter of many educational and other institutions for the public welfare in this town.

A severe loss has been sustained by the death of Mr. G. R. MacDougall, who was a generous benefactor to the Society by the legacy mentioned in a previous paragraph. He also paid over to the Treasurer a sum sufficient to cover the cost of publication of "A Guide to the Trees and Shrubs in the Bournemouth Gardens."

During the year other Members have also passed away, viz., Mr. Geo. Honeyman, J.P., Mr. A. J. G. Swinney, M.E., M.Inst.M.M., Mrs. de Paiva, Miss Eiloart, Mr. C. B. Green and Mr. Hy. Le Jeune. Mr. Green had been a Member for four years, and had lectured several times before the Botanical Section. He was a keen Botanist, an authority on the Flora of Purbeck, of which he was a collector, and had added to existing lists some species which he had discovered. Mr. Le Jeune had been a Member for 11 years, was Hon. Secretary in 1911-12, Secretary to the Archæological Section, and being a skilled engineer, had done much service to the Society in various ways. Reference to some of these Members was made in Vol. IX. of the Proceedings.

The principal donations to the Society were several books referred to in the Report of the Library Committee, and

A Ross binocular microscope, with accessories, and microscopic slides, presented by Mrs. J. Roberts Thomson;

A collection of pre-historic remains from Lake Dwellings in Switzerland, presented by Mr. A. W. Waters, F.L.S., F.G.S.

A wooden Swiss clock (date 1621) working without a pendulum, and a Thibetan praying wheel complete with prayers, presented by Mr. Hy. Le Jeune.

A model of the Ancient Norman Font in Winchester Cathedral, presented by Rev. Hy. Shaen Solly, M.A.

A number of Articles, chiefly Japanese, presented by Miss Henderson, sister of Mr. G. R. Mac Dougall.

It should also be mentioned that a valuable collection of Egyptian Antiquities in a show case, has been deposited in the custody of the Society by the Executors of Mr. MacDougall.

A very complete Herbarium, a number of beautiful Photographs and Lantern slides, and valuable books on Botany left to the Society by the late Mr. C. B. Green.

In conclusion the Council desires to express its best thanks to Mr. Walter Child Clark for permission to see his Rose Garden, to Mrs. Hamilton for permission to visit Honeycombe Chine, and to the Lecturers and Conductors of Excursions, whose services have been much appreciated.

Summary of Cash Account for the Year ending 30th September, 1918.

RECEIPTS.

	£	s.	d.	Amount for previous year. £	s.	d.
Balance at Bank on 1st Oct., 1917	91	18	8	133	4	10
Members' Subscriptions	201	7	6	168	17	6
Subscriptions in advance for 1918-19	6	12	6			
Sales of Volumes of Proceedings	0	6	6	0	11	0
Sales of Natural History of Bournemouth	4	1	6	0	13	4
Surplus from Excursion	0	2	0	2	15	6
Proceeds from Lectures	3	3	0	11	16	6
Interest on £50 war Loan, less Tax	1	16	3	0	10	9
	£309	7	11			

PAYMENTS.

	£	s.	d.	Amount for previous year. £	s.	d.
Rent of Room, Municipal College	35	0	0	35	0	0
Hire of Lecture Hall and Trinity Hall	4	18	4	3	2	6
Salary of Assistant Secretary ...	10	0	0	10	0	0
Printing and Stationery	26	16	7	23	5	6
Vol. IX. of Proceedings	36	7	3	30	13	1
Furniture and upkeep of Room ...	10	17	1	16	7	2
Expenses of Lectures	12	13	3	12	9	6
Postage	14	18	6	13	18	7
Subscriptions to other Societies ...	4	5	6	3	12	0
Insurance	1	14	3	2	0	10
Purchase and Preparation of Natural History Specimens and Photographic Records	2	16	9	6	15	1
Books	16	11	5	9	15	0
War Savings Certificates (£54) ...	41	17	0			
Expenses of Wild Flower Exhibition (for last year)	5	0	0			
Sundries	2	5	1	1	14	2
	£226	1	0			
Balance at Bank	83	6	11			
	£309	7	11			

The Society now possesses £50 war loan, 5%, and £54 War Savings Certificates.

We have examined the above Account, with the books of the Society and the Vouchers for payments, and the War Loan Certificate, and certify the same to be correct.

EDWD. BICKER, F.S.A.A.
C. H. BLACKETT.

Bournemouth, October, 1918.

The Society's Library.

The nucleus of the Library consisted of a number of books presented in January, 1910, by Dr. Crallan, our second President, who continued to make a succession of further generous gifts till his removal to Jersey. The example so set was followed by other members, thus, in the first year of the Library's existence, books were contributed by twenty different donors.

The first Hon. Librarian was the late Mr. Alexander Scott, and, since his lamented death in 1910, the office has been held in succession by Mr. F. I. Cooke (1910-12), Mr. W. Munn Rankin (1912-14), and Mr. Henry J. Ellis, the present holder of the office, who followed Mr. Rankin in 1914.

The growth of the Library has been due mainly to gifts of books, but these have been supplemented by purchases on a very limited scale. In the first eight years a total sum of £35 4s. 5d. was expended on the Library, part of this being for binding and miscellaneous expenses. In February, 1918, a special Committee was appointed to report on the condition of the Library, and to make recommendations for increasing its usefulness. In the report which the Committee presented to the Council it was suggested that the Library ought to contain:—

1. A complete collection of books and pamphlets bearing on scientific matters of local interest, especially those published since 1900.
2. A selection of the recognised standard text-books on each of the subjects within the purview of the various Sections of the Society.

It was also recommended that a standing Library Committee, with the Hon. Librarian as Secretary, should be appointed and empowered to deal with all matters pertaining to the Library, and that an annual sum of not less than £20 should be allocated to this Committee to be expended with a view to realising, as far as possible, the objects set forth above.

The Council adopted the report, appointed the Committee, and directed that a monthly report should be presented. Mr. George Grace was the first Chairman.

During the Session much work was done in classifying, arranging and shelving the books, and valuable additions were made to their number. Thirty-seven works have been purchased for the library, and a total of 279 volumes and pamphlets have been presented. The annual subscriptions for a number of periodicals have been maintained as in former years, and exchanges of our yearly volume of Proceedings have been kept up with a number of corresponding Societies. Lists are sub-joined giving (a) the principal books purchased during the session, and (b) the names of donors and the numbers of volumes of books or pamphlets given by each.

PRINCIPAL PURCHASES—OCT. 1917 SEPT. 1918.

"Text Book of Geology"—Lake and Rastall.
"British Conchology"—Jeffreys, 5 vols.
"Tidal Lands"—Oliver.
"Farm Insects"—Curtis.
"Insects and Man"—Ealand.
"Butterflies and Moths of the British Isles"—South, 3 vols.
"Victorian County History of Hampshire"— vols. 1 and 2.
"Pottery found at Silchester"—May.
"Earthworks in the New Forest"—Heywood Sumner.
"Cranborne Chase"—Heywood Sumner.
"Book of Gorley"—Heywood Sumner.
British Museum Guides to the Stone, Bronze and Early Iron Ages.

DONORS OF BOOKS AND PAMPHLETS.

Name	No. of vols.	Subject.
Miss Rooper	2	Botany.
Mr. E. H. Curtis	1	Archæology.
Mrs. J. Roberts Thompson	9	Microscopy and Bacteriology.
Professor G. Henslow	17	Botany.
Lord Grenfell	4	Archæology.
Mr. H. Le Jeune	2	,,
Mr. W. G. Wallace	5	Zoology.
Mr. F. B. Taylor	9	Zoology, etc.
Dr. M. R. Levinson	2	Bacteriology.
Mrs. Batley	1	Entomology.
Mr. R. P. Yates	5	Miscellaneous.
Mrs. Alder	9	Ancient Egypt.
Mr. H. St. Barbe	23	Geology.
Mrs. Toppin	76	Linnean Society.
Mr. T. B. Goodall	84	,, ,,
Mr. R. Y. Banks	30	Photography.

Also Mr. Geo. R. Macdougall presented continuations of the American Geographical Review, Bird Lore, etc.

H. J. E.

H. P.

Notes on the Bournemouth Natural Science Society's Collections.

(By W. G. WALLACE, Hon. Curator.)

In Vol. V. (1913-1914) of the Proceedings was published an account by Sir Daniel Morris, K.C.M.G., D.Sc., F.L.S., of the Society's scientific possessions. Since that time several valuable collections and many specimens have been acquired, and much work has been done in naming, arranging, and cataloguing them. The following is a brief statement of the scientific material now available for the use of members, or which will become so when suitable accommodation can be provided.

Geological. The principal item under this heading is the **Dent collection of Barton fossils.** This fine series embraces most of the type fossils of the Barton Beds (Upper Eocene), and many other species, and includes specimens of the remains of such vertebrate animals as Zeuglodon and Hyopotamus, the former being almost unique in Britain. There are over 130 species of mollusca and 13 species of vertebrates named and catalogued.

Supplementary to the above is a small collection of **Middle Eocene fossils** from the Paris basin, mostly named and all well mounted, presented by Mr. R. V. Sherring, F.L.S.

There is also a considerable amount of more or less unclassified material, from which, when space is available, a small general collection can be formed, embracing fossils representing the chief geological periods, besides specimens of typical rocks and minerals. The important and interesting collection of plant remains from the Bournemouth beds must also be mentioned.

Zoological. **The Batley Collection**, comprising over 2,000 birds' eggs, besides a number of skins and nests, from all parts of the world, has been carefully and systematically checked, arranged and catalogued by Messrs. W. Parkinson Curtis, F.E.S. and E. Harker Curtis, and is now housed in drawers and cabinets in the Society's room.

The excellent collections of **Skulls of British Mammals** and of **Types of Dentition** were prepared and presented to the Society by Mr. T. B. Goodall, F.L.S., F.R.C.V.S. The skulls represent most of the genera, and many of the species of the smaller British mammals. The collection of Types of Dentition illustrates the development, structure, and the forms of the different types of mammalian teeth.

The Land, Freshwater and Marine Shells, comprising about 500 species, form a good nucleus for a representative collection. There is also a separate series of about 90 British species, which, however, includes only a quarter of the local forms. These collections have been named and arranged by Mr. J. R. Edwards.

Entomology is not at present represented in our museum, but a very fine collection of British Butterflies and Moths in cabinets, has been presented by Dr. G. E. J. Crallan, M.A., M.R.C.S., and will be available as soon as space can be found in which to house it.

Botanical. The Society's general **Herbarium** is one of its most valuable scientific possessions, not only on account of the large number of British species which it contains, but because its systematic classification and convenient arrangement in special cabinets, the work of Mr. H. E. Swain, render reference to it easy and expeditious. It comprises over 1,400 species, and includes nearly all the local flowering plants, grasses and ferns.

The **Green Collection** embraces practically all the species found in the Isle of Purbeck, except some of the commonest plants, which are well represented in the general Herbarium.

In addition to the above there is a collection of local sedges presented by Mr. R. V. Sherring, F.L.S., comprising over thirty species and about one hundred specimens; and a series of about 800 species of Continental plants presented by Mr. H. E. Swain, as well as several small collections of Mosses, Seaweeds and of foreign Ferns.

Archæological. Prehistoric remains, in which our district is so rich, are at present chiefly represented by a few Palaeolithic and Neolithic stone implements. These have been supplemented by a small loan collection to form the series illustrating the Stone Ages in one of the show cases. The fine collection of Stone Implements offered to the Society by Mr. J. H. Scott, M.E., M.I.M.C.E., awaits the provision of adequate means for storing and displaying it.

The Society possesses two very interesting groups of Egyptian antiquities, which are of considerable value and importance as illustrating the civilisation of ancient Egypt. The collection presented by Mrs. Philpott is specially noteworthy for its alabaster unguent pots, its bronze figures, and for the beautiful carved wooden figure of Isis. The McDougall collection contains several examples of prehistoric pottery, the very interesting wooden models of a boat and of a bakery from a VI. dynasty tomb, and many other objects of practical or of symbolical use of various periods. Most of these objects are well authenticated, and their value is greatly enhanced by their association with their distinguished discoverer, Lord Grenfell, a portion of whose collection they originally formed.

Photographic and Record. The Society is fortunate in posessing a very fine and continually increasing series of lantern slides, at present over 1,300 in number, which have been classified and catalogued by Mr. R. Y. Banks, whose work many of them are. They embrace a wide range of subjects, including geological, zoological, entomological, botanical, geographical, topical, etc.

Microscopical. The small collection of about 500 microscope slides includes botanical, entomological, anatomical, and other objects.

In addition to the above systematic collections, the Society possesses a large number of isolated objects and small groups of specimens of various kinds, which cannot at present be arranged or displayed, but which will form the nucleus of further useful or attractive collections when space can be provided.

British Association.

In 1918, as in 1917, the British Association did not hold its usual meeting, and, consequently, there is no Delegate's Report to be inserted.

Report of Delegate to the Conference of the South-Eastern Union of Scientific Societies,

held in London, May 29th to June 1st, 1918.

I attended the opening meeting of the delegates on Tuesday morning, May 30th.

The following suggestions were made by Sir Henry Howorth—that if any of the affiliated societies possessed Type Specimens in their Collections, such specimens should be definitely described and illustrated, and a copy of the paper in which they were described should be sent to the Librarian or one of the Secretaries of the Union to be kept as a record, and also a copy should be sent to the Natural History Museum, or to one of the learned Societies, e.g., Zoological or Linnean.

2. The Librarian asked that if any members of our Society had any copies of the "Naturalist," especially of early numbers which they did not need, that he would be very grateful if such copies could be sent to him, as he was anxious to make up complete copies, which were now selling for £4 4s.

On Thursday evening, May 30th, Sir Ronald Ross read a most interesting paper on Malaria and Mosquitos in England, after which the following gentlemen spoke:—

Dr. Buchanan, of the Local Government Board,
Mr. Grove,
Capt. Macdonald, R.A.M.C.,
Col. Castelain, who had experience of Malaria in Africa,
Mr. Gahan and Mr. Laing, of the Natural History Museum.

The points on which the speakers asked specially for information were:

1. That the earlier stages in the Life Histories of the Anopheles and Culicinæ should be sent to the Natural History Museum, together with description of the nature of the localities in which they were found.

2. Personal experiences as to the nature of the bites inflicted, with description of the resultant irritation, etc.

The concluding meeting of the delegates was held on Saturday, May 31st. The points that occurred were:—

1. It was proposed to make certain Headquarters in the various districts of the Union in connection with the Botanical Survey, and that names should be furnished of Botanists who would be willing to act as Referees, and that the names should be sent to the Botanical Committee of the Union.

Sir D. Morris suggested that Bournemouth would be a very suitable place for the Headquarters of our District.

I imagine that the Union would be very glad of names of those of our members who would be willing to act as Botanical Referees.

Reference was made to the Exhibition of Wild Flowers in the Public Library, and how successful this had been.

Finally, Dr. Martin said how disappointingly meagre up to the present was the information sent in about the prevalence of Mosquitos.

Another member, whose name I did not catch, suggested that what was really needed was that some person who knew how to find the Mosquitos in their various stages should personally conduct Field Expeditions and show investigators exactly how to find and capture them.

I said that we had been trying to find them here, but up to the present our results had been negative and I had not realised that any report was expected to be brought to the Congress.

(Signed) F. G. PENROSE.

P.S.—At the final Meeting of the Delegates, a gentleman, whose name I think was Mr. Lindley, asked me to try and find out if our Society could suggest the name of any gentleman or lady (quite irrespective of whether he or she was a member of our Society or of the Union), who had the requisite knowledge as to the best way in which to divide up the New Forest area into Regions for Sectional Survey work in Natural History, Archæology and Sociology.

It was recognised that the whole area is too extensive unless subdivided, and the Union wish to know to whom to apply for advice.

Obituary Notices.

(1st March, 1918—30th April, 1919.)

GEORGE HONEYMAN, J.P.

Died—March 11th, 1918.

Mr. Honeyman was a member of several years standing, having been elected in 1911. He took some interest in geology but his chief hobby was horticulture. When living in Scotland he loved and cared for his own garden and did much to encourage a love of flowers among his poorer neighbours. His deepest interest was in children and their education and, as Chairman of a School Board and a County Councillor for Perthshire, he took every opportunity of furthering the cause he had at heart.

MISS CATHERINE AGNES ROOPER.

Died—May 2nd, 1918.

Miss C. A. Rooper was not only one of the original members of the Society, but took such an important part in its inception that she might almost be described as its Founder. It was at a meeting held in November, 1903, at her residence in Gervis Road, that the Bournemouth Natural Science Society was formally constituted, and her interest in the Society and work for it continued to the last.

At first Miss Rooper was Joint Honorary Secretary with Dr. J. R. L. Dixon, but soon resigned this position to take up the Chairmanship of the Botanical Section, which she held till her death. She was also one of the earliest of the Vice-Presidents to be appointed, and, from the beginning, was a member of the Committee, afterwards known as the Council. She frequently attended the meetings and took part in the transaction of business, but her chief interest was in the Botanical Section. The volumes of Proceedings give the titles of more than a dozen lectures or papers on botanical subjects given by the deceased lady from time to time, and record a great number of working meetings of the Section in connection with the arrangement of the Herbarium, and recently, for the preparation of the weekly display of flowers in the vestibule of the Public Library. The volumes also mention various gifts of books to the Society's own Library. Although in these pages prominence is naturally given to Miss Rooper's work for the Society, she had many other interests. She was well known locally as an amateur artist, and many of her pictures were shown at the Annual Exhibition of the Bournemouth Art Society. As was fitting in a sister of that distinguished educationist, the late Mr. T. G. Rooper, she was keenly interested in matters relating to education. She was a member of the Committee of the Drummond Road School of Art and Technical Instruction, and had a share in the organisation and management of the Bournemouth Pupil Teachers' Centre. These institutions ceased to exist some years ago, but Miss Rooper took up the Honorary Secretaryship of the Education Section of the Victoria League and Juvenile Association, and retained that office till the end. The removal by death of Miss C. A. Rooper will long be felt as a loss in a wide circle, and not least by those who were associated with her in the work of the Bournemouth Natural Science Society.

A. J. G. SWINNEY, M.E., M.Inst.M. and M.

Died—July 23rd, 1918.

Mr. Swinney joined the Society in May, 1916, attaching himself more particularly to the Geological Section. On February 21st and March 7th, 1917, he gave lectures before that Section on "The Mining of Kimmeridge and other Oil Shales." These lectures appeared in Vol. IX. of the Proceedings as the third and last of a series of papers on "The Problem of Kimmeridge Shale."

MISS EDITH EILOART.

Died—September 9th, 1918.

Miss Eiloart's father was a London solicitor, her mother the writer of stories popular in their day. She settled in this neighbourhood about nine years ago, and joined the Society in 1912. She took a general interest in scientific subjects, was devoted to her garden, and delighted in foreign travel.

LIEUTENANT PERCIVAL M. CHADWICK, R.E.

Killed in action—September 22nd, 1918.

When the war broke out Mr. P. M. Chadwick was a member of the Staff of the Civil Engineering Department of the University of Birmingham. He was B.Sc. (Engineering) in Honours of the London University, and had received his M.Sc. degree, Birmingham, for an experimental research on centrifugal pumps. His intended continuation of this research would, no doubt, have led to the doctorate had his life been spared. Passing from the University O.T.C. to the East Anglian Royal Engineers he served in Gallipoli, and was present at the evacuation. Recovering from shell-shock and enteric fever he was sent to France. Twice he was wounded, and, a few weeks before the Armistice, a German shell cut short a career so full of promise. Lieutenant Chadwick joined our Society in April, 1918, and looked forward to taking an active part in its work when the war should be over. His ability as a lecturer, his intimate knowledge of many subjects, and his store of personal experiences would have made his contributions of exceptional interest and value. Of his

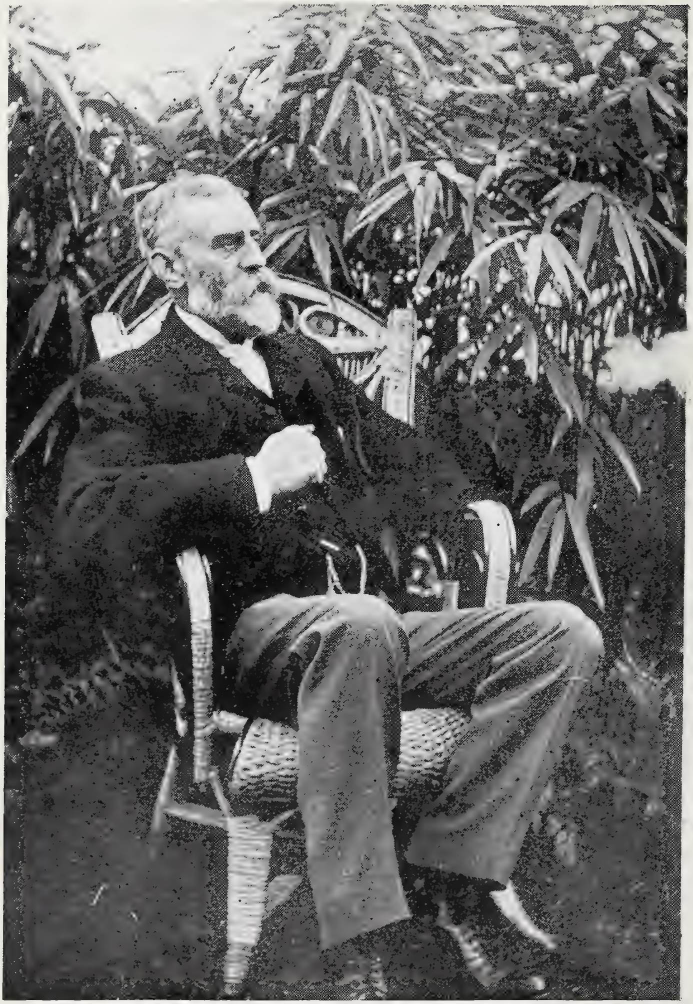
PLATE I.

THE LATE PERCIVAL M. CHADWICK,
B.Sc. (Lond.), M.Sc. (Birm.),
A.C.G.I., A.M.I.C.E., F.C.I.

BRITISH MUSEUM
NATURAL HISTORY

BRITISH MUSEUM
NATURAL HISTORY

PLATE II.



THE LATE CHARLES BAYLIS GREEN.

character as a soldier and in civil life the following quotations speak eloquently.

His Commanding Officer wrote to his parents: "In losing your son the Army has suffered enormously, as his previous knowledge in civil life made him particularly able in all the duties of field company work. I have never met a man in whom I would place more confidence, for not only had he a vast experience in engineering matters of all kinds, but he was conscientious to a degree, and seemed to be without fear absolutely. I cannot do him justice in mere words."

Professor F. C. Lea, writing in the Birmingham University Magazine says:—"As a student he not only had an accurate knowledge of all branches of engineering, but was also extremely anxious to make some contribution to existing knowledge; as a teacher he was most conscientious, and thought no trouble too great if only he could assist students; as a colleague he was always anxious to do all in his power for the well-being of the Department and the University. When he left us we knew [illegible] would face the horrors of Gallipoli or of shell-strewn [illegible], [illegible] we did know that whenever duty called he would not shirk or be afraid, and in his life and in his death our confidence was justified."

Such a case as that of Lieutenant Chadwick enables us to realise at what a cost the long deferred victory has at last been won. The whole of the Society sympathises with the parents, both of them members, who have suffered such a loss and we are all proud that the rolls of the Society should have borne, if only for a few months, the name of Percival M. Chadwick.

CHARLES BAYLIS GREEN.

Died—October 6, 1918.

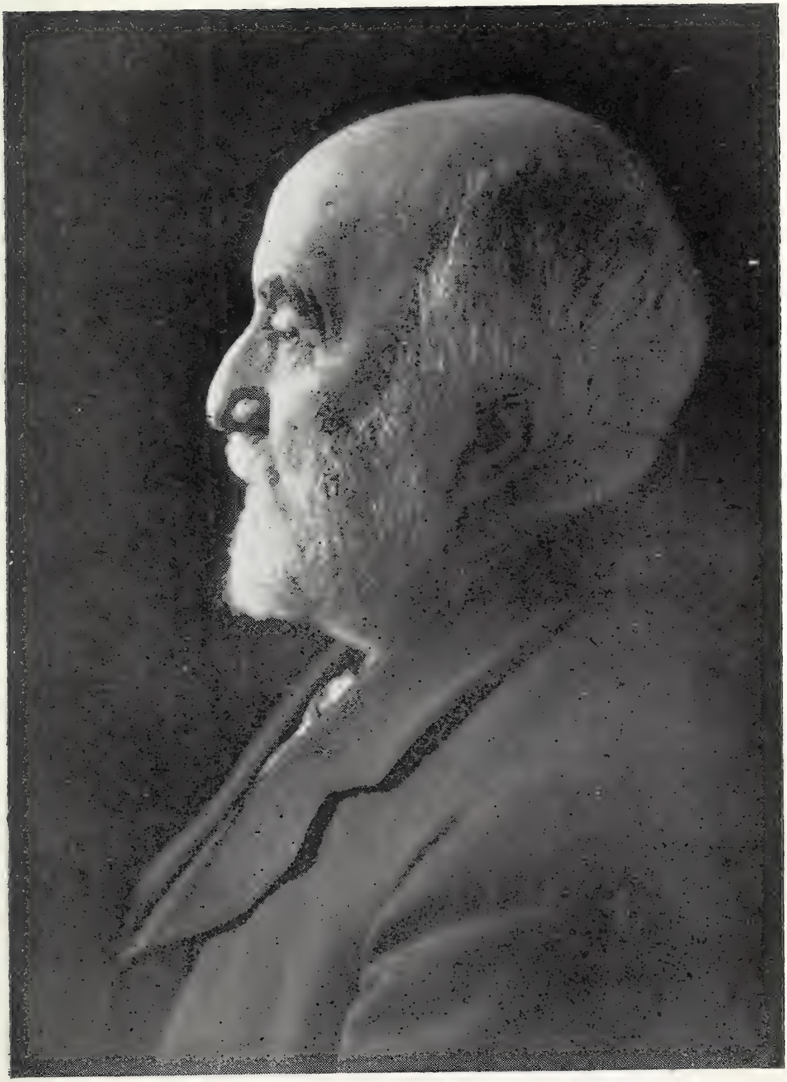
Mr. Green was for many years on the staff of the Railway Clearing House, Euston Square. He occupied his spare time in the cultivation of some of the attractive varieties of British ferns. He worked for some years in close association with the late Charles T. Druery, F.L.S., the distinguished pteridologist, who gave Green's name as the authority for a plumose sub-variety of *Polystichum aculeatum*. In 1902 his interest in general field botany was excited on becoming a member of the Acton Natural History Society and for its district of Middlesex he made many records and photographs of important plants. His opportunities as a collector were much enlarged when he retired on a pension in 1910 to live at Swanage. He proved an energetic and thorough worker, searching all parts in and around the Isle of Purbeck. His quick eyesight and painstaking habits resulted in the recording of new localities for most plants known there as well as in the addition of a number of rarities. He joined the Bournemouth Natural Science Society in 1914 and, on December 8 in that year, gave the first of two lectures on "Some Isle of Purbeck Plants." The second lecture was given on March 4, 1915, and the two lectures appear in Vol. VII. of the Proceedings. On January 6, 1916, he lectured on "The Ferns of Purbeck," and was the conductor of a Botanical Excursion to Wareham and Ridge on June 8 of the same year. In Vol. VII. his name, together with that of Mr. R. V. Sherring, F.L.S., is prefixed to the list of plants collected in the district during the season and in Vol. VIII. Mr. Green's name stands alone in connection with the corresponding list. On April 4, 1917, Mr. Green read a paper on "Some Additions to the Purbeck Flora" and he was one of the conductors of an Excursion to the Blue Lakes in the following July. Workers at once so competent and so enthusiastic are rare and his death was a grievous loss to the Botanical Section and the Society generally. He bequeathed to the Society a valuable Herbarium, a large number of photographs and lantern slides and a collection of books.

SIR WILLIAM DUFF GIBBON.

Died—March 19, 1919.

Sir W. D. Gibbon spent more than fifty years of his long and useful life in Ceylon where he held many important and honourable public offices. He settled in Bournemouth in 1911 and at once began to interest himself in the life of the town. He was associated with Sir Daniel Morris, K.C.M.G., in starting a branch of the Royal Colonial Institute. Of this he was elected Chairman and was also a Vice-President of the R.C.I. He was a member of the local committee of the Y.M.C.A., an elder of St. Andrew's Presbyterian Church, President of the Bournemouth Auxiliary of the British and Foreign Bible Society and a member of the council of the Bournemouth Literature and Art Association. He joined the Natural Science Society in June, 1918. On March 5, 1918, he gave what was described as "An informal Talk on Ceylon and its contribution to the Empire's Tea Table." Although this was arranged by the Literature and Art Association, it was held, by permission of the Council, in the room of the Natural Science Society and was attended by many of its members. Sir William Gibbon was both liked and respected by all, and they were many, who knew him.

PLATE III.



THE LATE SIR WILLIAM DUFF GIBBON.

List of Members.

Revised to 5th May, 1919.

* HONORARY MEMBERS. † PAST PRESIDENTS. O ORIGINAL MEMBERS.
A ASSOCIATE MEMBERS.
Members elected since August 1st in Italics.
Members resigned since September 30th in brackets [......].
The year of election is given before the name of each member.

A

1912	Alabaster, Lady	Dil Aram, 36, Sea Road, Boscombe
1905	Alder, Mrs.	East Grove, Lymington
1908	Alder, Miss Evelyn	,, ,,
1913	Alexander, Saml. J.	Abbotslea, 5, Surrey Road
1911	Allan, Alexr.	Bylands, Boscombe Cliff Road
1911	Allen, Rev. F. A., M.A.	Staffa, Wellington Road, Parkstone
1918	Alleyne, Miss	Beechwood House, Wilfred Road, Boscombe
1906	Allis-Smith, Miss E.	Martello Towers, Branksome Park
1919	*Anderson, Col. R. F.*	Glenalmond, 5, Madeira Road
1914	Andrews, W.	Chineside, 15, Studland Road
1905	Archer, J. W.	Windlesham, 5, Braidley Road
1905	Archer, Mrs.	,, ,,
1913	Armstrong, Mrs.	27, Cecil Road, Boscombe
1915	Arundel, John T., F.R.G.S.	Savoy Hotel, Bournemouth
1911	Atkins, W.	The Hermitage, 40, Wimborne Road
1911	Atkins, Mrs.	,, ,,
1915	[Atkins, Miss Bessie]	Glen Lee, 10, Alumdale Road
1916	[Austen, Mrs. B. Tennant]	Athelstan, Queen's Park Road

B

1906	Backhouse, Hy., F.R.H.S.	Yelland, 23, McKinley Road
1910	Bain, Mrs.	14, Oxford Avenue, West Southbourne
1918	Balding, Bernard T.	15, Ravenscroft Park, High Barnet, Herts
1914	Banfield, Col. R. J. F., C.B.	Park View, 42, Poole Road
1905	Banks, R. Y.	Egerton, 12, Portchester Road
1905	Barlow, E. W., B.SC., F.R.A.S.	112, Cromwell Road, S.W. 7.
1912	ABarraclough, Aug., M.A. (Cantab.), F.R.G.S.	56, Richmond Wood Road
1909	Barratt, J. Hayes	Brundon, 2, Surrey Road
1914	Barrington, W. J.	Heather Dene, Penn Hill Avenue, Parkstone
1918	*Bartle H.*	74, Lowther Road
1918	Bartle, Miss M. Marjorie	Braemar, Longfleet Road, Poole
1905	Bartlett, H. F. D., F.E.S.	1, Myrtle Road, Richmond Park
1914	Bartlett, T. O.	Wilts and Dorset Bank, Westbourne
1918	ABeaumont, Miss E. J.	60, Fitzharris Avenue
1917	[Belcher, Taswell Ed.]	Trefloyne, Sandringham Road, Parkstone
1909	Benison, F.	Aldborough House, 14, Rosemount Road
1909	Benison, Mrs.	,, ,,
1917	Bennett, Douglas, M.A.	Woodlands, Ashley Road, Parkstone
1905	Bennett, Miss E. C.	85, Talbot Road, Winton
1904	Bennett, H. Morden	Manor Lodge, 20, Manor Road
1913	Bilton, Miss C. E.	Dilkhush, 25, Parkwood Road, Boscombe
1912	Blackall, Miss E. E.	10, Harcourt Road, Boscombe Park

1908	Blackett, C. H.	Rosapenna, 16, McKinley Road
1908	Blackett, W. Eggleston	Blanchland, 21, McKinley Road
1918	*Blackford, J. R.*	Fern Lodge, St. Michael's Road
1918	*Blair, Mrs. Chas.*	Ranawella, 39, Wimborne Road
1915	Blondel, Mrs.	Redroofs, Ipswich Road
1916	Bloomfield, Rev. H., M.A.	Moordown Vicarage
1917	Blundell, Miss M. J.	Chesterton, Kingsbridge Road, Parkstone
1910	*Bond, F. Bligh, F.R.I.B.A.	454, Gloucester Road, Bristol
1919	*Bonnard, Mrs. C. E.*	Barrowby, Wilfred Road, Boscombe
1916	Booth, Miss	Boscombe Grange, Percy Road
1918	*Boubnoff, N. A.*	East Anglia, 6, Poole Road
1918	Boul, Wm. G., M.A., LL.D., D.C.L.	45, Lowther Road
1918	*Boul, Mrs.*	,,
1914	Bradbury, Miss	La Bocca, 2, Portarlington Road
1914	Bradbury, Miss Alice	,, ,,
1914	Bradbury, Miss Edith	,, ,,
1908	Brazier, J. J.	Fairlawn, 48, Lowther Road
1917	ABrett, Lloyd	10, Warwick Road, Boscombe
1914	Bright, Percy, F.E.S.	Colebrook Grange, Christchurch Road
1917	Brown, Edward	Wood End, Chessel Avenue
1917	Brown, Mrs.	,, ,, ,, ,,
1917	Brownen, Geo., F.C.S.	Talnas, Grove Road, Christchurch
1916	[Brownsworth, Miss Edith M.]	Stoneleigh, Heron Court Road
1905	Brumell, Geo., A.R.I.B.A.	Maori, Richmond Park Avenue
1915	[Bryant, Mrs.]	Wolverton, 44, Alum Chine Road
1907	Bulfin, Ignatius, B.A.	The Den, 26, Knole Road
1908	Bulfin, Mrs.	,, ,,
1915	Burton, Jas.	163, Richmond Park Road

C

1910	Cameron, Miss	Little Forest House, 19, Bath Road
1912	Carus-Wilson, C., F.R.S., Edin., F.G.S.	Altmore, Waldegrave Park, Strawberry Hill, Middlesex and Royal Societies' Club, S.W.
1918	Carter, Rear Admiral A. W.	Dol Peris, 27, Surrey Road
1918	Carter, Mrs.	,, ,,
1918	*Carter, Wm.*	The Hermitage, Upper Parkstone
1918	*Carter, Mrs.*	,, ,,
1918	Chadwick, Ellis, M.A.	St. Moritz, Penn Hill Avenue, Parkstone
1918	Chadwick, Mrs.	,, ,, ,,
1918	[Chadwick, Percival M.] killed in action,	,, ,, ,,
1918	Chadwick, Norman Ellis	,, ,, ,,
1909	Chandler, S. Whitty, B.A., J.P.	St. George's, Cecil Road, Boscombe
1909	Chapman, Miss	Coolavin, 18, Hawkwood Road, Boscombe
1912	Charsley, Mrs.	Camborne, Belle Vue Road, Southbourne
1918	*Chart, Mrs. Jas.*	Toynbee, St. Peter's Road
1912	AChilver, Miss Kathleen M.	79, Richmond Park Road
1911	Clark, Walter Child	Michelgrove House, Boscombe
1917	Clifford, Miss Winsloe	6, Walpole Road
1905	Coddington, E. F.	St. Frideswide, 94, Southbourne Road
1919	*Coke, Brig-Gen. E. Beresford,* C.V.O.	Harland, Derby Road
1918	Colebrook, H. W. V.	Lynton, 64, Lowther Road
1911	Collins, W. F.	Vellore, Overcliff Drive
1908	Cooke, F. I.	Corona, Annerley Road
1912	Cooper, Ernest	100, Old Christchurch Road
1909	Cooper, Mrs. J. Omer	6, Queensland Road, Boscombe
1909	Cooper, J. Omer	,, ,, ,,

1908	Cooper, Rev. W. H. Windle, M.A., F.R.G.S.	The Birks, 2, Branksome Wood Road
1910	Cooper-Dean, Mrs.	The Old Vicarage, Pokesdown
1916	Corner, Rev. Arthur E.	Eversley, Branksome Avenue
1917	Corrie, E. Rowland	Coombe Wood, Balcombe Road, Branksome Park
1917	Corrie, Mrs.	,, ,, ,,
1914	Cotes, Sir Merton Russell, J.P., F.R.G.S., M.J.S.	East Cliff Hall
1914	Cotes, Russell, Lady, F.R.S.L., M.J.S.	,, ,,
1913	Cotes, H. V. M.	Meyrick Park House, Meyrick Park
1916	Cowell, Geo. Edmund	The Hawthorns Hotel
1904	Cowie, Dr. C. G., M.A., M.D.	Bonaccord, Westminster Road
1903	o†Crallan, Dr. G. E. J., M.A., M.B., M.R.C.S.	Gouray Lodge, Gorey, Jersey, Channel Islands
1917	[Crosby, Chas.]	Corbett House, Stroud, Glos
1917	[Crosby, Dr. Harry Man]	,, ,, ,, ,,
1917	[Crosby, Mrs. do.]	,, ,, ,, ,,
1916	Crump, E. Compson	The Hurst, Burton Road, Branksome Park
1916	Crump, Mrs.	,, ,, ,, ,,
1913	Curme, Decimus, Surg. Lt.-Col.	New Bohemia, Nelson Road
1913	Curme, Mrs.	,, ,, ,, ,,
1903	oCurtis, W. Parkinson, F.E.S.	Drake North, Sandringham Road, Poole
1914	Curtis, Eustace H.	Aysgarth, Poole

D

1914	*Dale, Wm., F.S.A.	The Lawn, Archer's Road, Southampton
1918	*Davies, Miss Nesta*	Sunnylea, Bournemouth Road, Parkstone
1910	de Castro, Geo., M.R.C.S. (Eng.)	Sunnydene, 76, Drummond Road
1910	de Castro, Mrs.	,, ,,
1915	de Castro, Miss Mary B.	101, Evelyn Road, Moordown
1917	Dell, Wm. G.	6, Richmond Hill
1918	*Dence, Miss*	Birk House, Wollstonecraft Road
1905	de Paiva, R. A.	San Remo, 13, Carysfort Road
1914	Dickson, Col. W. D., M.R.C.S., L.R.C.P.	Southill, 32, Dean Park Road
1914	Dickson, Mrs.	,, ,,
1903	o*Dixon, Dr. J. R. L.	
1910	Dodshon, Edwin., L.L.B.	Lloyds Bank Chambers
1917	Dolamore, F. P.	Boldrewood, Meyrick Park Crescent
1915	[Dolby, Geor. Alex., F.R.G.S.]	Nazdar Hall, Branksome Avenue
1918	*Dolby, Miss Fanny*	45, Lowther Road
1904	Druitt, J., J.P.	Avebury, 10, Madeira Road
1906	Dunning, Mrs.	The Homestead 21, St. Clement's Road
1914	Dyer, J. Herbert	Hillcrest, Queen's Park West Drive

E

1904	Earle, Dr.	East Hayes House, Bath
1917	Edwards, John Rowland	The Woodlands, 5, Hayes Avenue
1912	[Eiloart, Miss] deceased	Glengyle, Chester Road, Branksome Park
1913	Ellis, Hy. J.	Chesterford, Richmond Park Avenue
1918	*Ellis, Mrs. Laura M.*	The White House, The Butts, Warwick
1904	Elwes, Captain G. R., J.P.	Bossington, 14, Knyveton Road
1909	Evans, P. H. L., M.A.	Stirling House, Manor Road
1916	Evans, Rev. L. H., M.A.	Milcombe Vicarage, near Banbury

F

1918	*Fallows, John Arthur,* M.A.	Danehurst, Brunstead Road
1918	*Fallows, Mrs.*	,, ,,
1916	Farnell-Watson, Mrs,	15, Alumdale Road
1918	Ffennell, Edwd. B., M.D.	West Heath, 23, Belle Vue Road, Southbourne
1918	Ffennell, Mrs.	,, ,, ,,
1918	Ffennell, Miss M. R.	,, ,, ,,
1914	Fielding, Dr. Thos., M.D.	Genesta, West Hill Road
1903	oAFirbank, Miss, LL.A., A.C.P.	5, Buchanan Avenue
1917	Forrest, Mrs.	Hillsborough, 36, Westbourne Park Road
1918	*Fowler, Miss R. A.*	The Hydro, West Bournemouth
1906	Frean, G. M.	Cranicombe, Branksome Avenue
1910	Frean, Mrs.	,, ,,
1915	Frean, Miss Eleanor	,, ,,
1913	Freeman, Miss Emily	Corona, Annerley Road
1915	Freeman, Geo. Broke	Hasland, 13, Grosvenor Road
1918	*Freeman, Geo. A.,* B.SC., LOND.	75, Paisley Road, W. Southbourne
1918	*Freeman, Mrs. M. H.*	,, ,, ,,
1918	*Freeman, Miss L. H.*	,, ,, ,,
1918	*Freeman, Frank G. W.*	,, ,, ,,
1909	French, J. M.	Jumpers House, Christchurch
1916	Furner, Miss Kemp	Calluna, 4, West Cliff Road

G

1917	Garnett, H. A.	18, Campbell Road, Boscombe
1917	Garnett, Mrs.	,, ,, ,,
1917	Garrard, Miss	The Hawthornes, 67, Richmond Wood Road
1918	Gent, Wm. Hy.	Holme Cote, 30, Montagu Road, W. Southbourne
1913	George, Arthur Durancé	Alderholt, 6, Clarendon Road
1918	*Gibbins, B.*	Troutbeck, Birchwood Road, Parkstone
1918	[Gibbon, Sir Wm. D.] deceased	Hathaway Cottage, 4, Surrey Road
1914	AGill, Edwin R., A.R.C.P.	Public Library, Poole
1918	*Godfrey, Col. Masters John,* F.L.S.	Connaught Court, West Hill Road
1903	oGoodall, T. B., F.R.C.V.S., F.L.S	Purewell Cross, Christchurch
1914	Gosse, Wm., M.D., D.P.H., Camb.	The Links, Sandecotes Road, Parkstone
1916	Grace, Geo., B.SC., Lond., A.R.C.SC.	Inglenook, Keighley
1917	[Grace, Mrs.]	,, ,,
1919	*Graham, J. G. D.*	Cranemoor, Highcliffe, Christchurch
1911	Grange, W. D'Oyly, M.D.	11, McKinley Road
1918	Gray, Miss Alice	West Heath, 23, Belle Vue Road, W. Southbourne
1904	Gray, A.	Woodville, 26, Melville Road, Winton
1911	Gray, Geo. W.	Darena, 15, Wellington Road
1911	Gray, Mrs.	,, ,,
1914	[AGreen, C. B.] deceased	Linden Villa, Argyle Road, Swanage
1918	Grenfell, Field-Marshal Lord of Kilvey, G.C.B., G.C.M.G., LL.D., F.S.A.	St. Rode, Parsonage Road
1914	Greves, E. Hyla, M.D., M.R.C.P.	Rodney House, 19, Poole Road
1914	Greves, Stanley S. Hyla	,, ,,
1917	Griffiths, Capt. David	Bakrota, 82, Belle Vue Road, Southbourne
1917	Grindley, Miss Edith	3, Belvedere Crescent, Parkstone
1916	Grubb, Rev. H. P., M.A.	Surrey Lodge, Balmoral Road, Parkstone

H

1914	Haig, W. S.	Birchwood Cottage, Birchwood Road, Parkstone
1915 A	Hall, Chancellor T. C.	6, Verne Road, Rodwell, Weymouth
1910	Hamilton, Mrs.	Boscombe Place
1918	Hamilton, Rd., M.D. LOND.	100, Alexandra Road, Parkstone
1913	Hammer, Miss A. G.	66, Lowther Road
1918	Handsley, Mrs.	West House, 30, Portarlington Road
1918	Handsley, Miss	,, ,,
1913	Hannah, W. Rainsford	Stanmore, 49, Branksome Wood Road
1916	Hannah, Mrs.	,, ,,
1908 A	Harding, Miss	Alma Road Council School
1918	*Harkness, Mrs. J. C.*	Hawkley, 27, West Hill Road
1913	Harris, Miss K.	Trescott Grange, Harvey Road, Boscombe
1912	Harrison, Henry	14, South Bar, Banbury
1914	Hartley, Dr. J.	62, Portchester Road
1914	Hartley, Mrs.	,, ,,
1914	Hatton, Rev. C. O. S., B.A. (Camb.), F.L.S.	Hinton Admiral Vicarage, Christchurch
1919	*Havelock, Mrs. Broadfoot*	Devonshire House, Richmond Hill
1917 A	Hawkins, R. W.	Westlands, Western Road, Branksome Park
1917	Haydon, Clement J.	Ben Veula, 29, West Cliff Road
1918	Haythorne, Edward Colin Campbell	Forest Lodge, Burton Road, Branksome Park
1917	Henderson, Miss A. J.	Springbank, 22, Fox Road, Greenock
1911	Henslow, Rev. Professor Geo., M.A., F.L.S., F.G.S.	Danehurst, 40, Branksome Wood Road
1918	*Elected an Honorary Member	
1916	Hill, Rev. Reginald J., M.A.	Leyburn-Lea, Belvedere Road, Scarborough
1909	Hill, S. McCalmont, D.C.L.	The Club, Boscombe
1904	Hinton, Miss	Welcombe, 1, Argyll Road, Boscombe
1917	Hobson, Miss	The Hawthorns, 67, Richmond Wood Road
1917	[Holdom, Mrs.]	Cranfield, Spurr Hill Avenue, Parkstone
1916	Holgate, Mrs.	116, Parkwood Road
1910	Holmes, C. F.	Brackenwood, 37, Southern Road, West Southbourne
1909	Holmes, Mrs.	,, ,, ,,
1911	[Holmes, Miss M. A.]	4, Beaufort Road, West Southbourne
1911	Holmes, Miss S. C. M.	,, ,,
1911	Homer, L. V. C.	Carron, 54, Southcote Road
1911	[Honeyman, G.] deceased	Stormont, Milton Road
1912	Honeyman, Mrs.	Studley, Wimborne Road
1912	Honeyman, Miss M. W.	,, ,,
1918	[Hood, Mrs. Alfred]	Loughtonhurst, West Cliff Gardens
1911	Hudson, F.	Peñarol, Parkstone
1911	Hudson, Mrs.	,, ,,
1917	Hume, Dr. Geo. H.	Lawnswood, Beechey Road
1917	Hussey, Chas.	18, Grand Avenue, W. Southbourne

I

1905	Ibbett, F. W., M.A.	Central Education Office, Yelverton Road
1914	Instone, Thos.	31, Portchester Road
1914	Instone, Mrs.	,, ,,
1914	Instone, Allan C.	,, ,,
1914	Instone, Mrs. A. C.	,, ,,

J

1912	James, Thos. Bath	Trevenen, Howard Road
1912	James, Mrs.	,, ,,
1912	James, Miss G. Gladys	,, ,,
1911	Jeffery, T. J. P.	Meldon, Ormonde Road
1911	Jeffery, Miss Ruby	,, ,,
1912	Jeffery, Miss E. S. M.	Boscombe Grange, Percy Road
1917	Jermyn, F. L.	c/o L. & S.W. Bank, Bournemouth
1916	Jones, Miss M.	10, St. Stephen's Road
1908	A Jones, W.	Council School, Boscombe
1905	Jones, W.	254, Old Christchurch Road

K

1910	Kay, A. J.	Winsgarth, 141, Lowther Road
1911	Kaye, J. E.	Tynedale, 38, Portchester Road
1911	[Keevil, W. C.]	Eglington, Kinson, Bournemouth
1917	*Kelsall, Rev. J. E., M.A.	Milton Rectory, New Milton, Hants
1914	Kenrick, Archibald	Broom House, 37, West Cliff Road
1912	Keogh, Duncan	The Warren, 13, Richmond Wood Road
1912	Keogh, Mrs.	,, ,,
1916	Kersey, H. A.	4, Glen Road, Boscombe
1917	[Kidner, Hy., F.G.S.]	Lawnside, Burley, Brockenhurst
1913	Killick, H. F.	Rawdon, 9, Marlborough Road
1916	Kilner, Miss Ethel M.	St. Mary's, Chessel Avenue
1912	Kirkby, Mrs.	Inglewood, Richmond Park Avenue
1918	Kohn, Arthur L.	Fairhaven, Erpingham Road

L

1917	Langley, Miss Constance	96, Richmond Wood Road
1910	Lattey, F.	Alyngby, 44, Stourcliffe Avenue, Stourwood
1917	Lattey, Mrs.	,, ,, ,,
1919	*La Touche, Miss*	Oakfield, Dane Court Road, Parkstone
1919	*Leach, Miss M.*	5, Lansdowne Road
1918	*Lee, E. Kenworthy*	Rosebank, 39, Lansdowne Road
1919	A *Leigh, H.*	58, Gladstone Road
1910	Lendrum, Miss A. M.	c/o Mr. de Paiva
1913	[Letcher, Mark Jameson] deceased	Gwestfa, 18, Richmond Wood Road
1917	Leverson, Montague, Rd., M.D., M.A., P.H.D.	79, Irving Road, W. Southbourne
1917	Ley, Dr. Hy. Jas.	62, Herberton Road, W. Southbourne
1917	Ley, Mrs.	,, ,, ,,
1905	*Liddiard, Jas. E., F.R.G.S., M.N.G.S. (U.S.A.)	Rodborough Grange, 66, West Cliff Road
1918	Lindsay, Miss Linda	Seathwaite, Corfe View Road, Parkstone
1903	o*Linton, Rev. E. F., M.A., F.L.S.	Edmondsham, Salisbury
1916	[Littlejohns, Eng. Rear-Admiral, C.B.]	Harrow, Forest Road, Branksome Park
1916	Logan, Mrs.	36, Hamilton Road
1909	Lucas, Arthur	Croftmoor, 23, Dean Park Road
1919	*Luckham, John Bennett,* M.A.	Cranemoor, Highcliffe, Hants
1903	oLupton, Miss	Bolingbroke, Knole Road
1911	Lynch-Blosse, Rev. R. C., M.A.	Hawthorne Dene, 10, Cavendish Road
1911	Lynch-Blosse, Mrs.	,, ,, ,, ,,
1909	Lyon, Claude	Shalimar, Wilderton Road, Branksome Park
1909	Lyon, Mrs.	,, ,, ,,

M

1911	Macalister, R., M.INST.C.E.	Somerled, 29, Meyrick Park Crescent
1911	[Macalister, Mrs.]	,, ,,
1908	AMackay, Miss	St. Andrew's School, Malmesbury Park
1913	[Mackenzie, Ridley, M.D.]	Heather Bank, Richmond Hill
1918	[Mackenzie, Mrs.]	,, ,,
1911	McBean, Miss J.	Inglenook, 29, Parkwood Road
1909	AMcBean, Miss S.	Froebelheim School, 47, Lowther Road
1918	McLaughlin, Fredk. Jas., M.Inst.C.E.	3, Pinecliffe Avenue, W. Southbourne
1918	[Malim, Herbert, M.A.]	4, Lorne Park
1917	Manera, Lieut.-Col. G.	Avoncliff, 12, Knole Road
1910	Mann, W. P., B.A.	Bonds, Garstang, Lancs
1905	*Markwick, Col. E. E., C.B., C.B.E., F.R.A.S.	c/o Sir C. R. McGrigor, Bt., & Co., 39, Panton Street, Haymarket, S.W.1.
1917	Marston, Miss G.	Bourne Hall Hotel
1913	Martin, Miss Florence G.	32, Southbourne Road
1911	Martland, Dr. T., L.R.C.P., M.R.C.S.	Standish House, Fitzharris Avenue
1916	Mason, Rev. A. L. A., M.A.	Alington Grange, 9, Kerly Road
1906	Mate, Ald. C. H., J.P.	Elim, 3, Surrey Road South
1914	Mate, Sidney J.	10, Landseer Road
1918	*Matthews, Mrs.*	11, St. Katharine's Road, Southbourne
1919	*Matthews, Miss Annie*	,, ,,
1912	[Maybery, Joseph, J.P.] deceased	Langley Dene, 55, Wellington Road
1918	Mettam, Mrs. Wilford	12, Crabton Close Road
1911	Michell, Mrs.	Merton, 54, Christchurch Road
1918	[Moon, Miss Ethel Gay]	c/o Mr. Maybery
1913	Moore, F. W.	Goathland, Tower Road, Branksome Park
1919	*Moorhead, Mrs.*	Brightlands, 34, Crabton Close Road
1908	†*Morris, Sir Daniel, K.C.M.G., J.P., M.A., D.SC., D.C.L., LL.D. F.L.S.	14, Crabton Close Road
1911	Morris, Lady	,, ,,
1918	Morter, Percy	52, Lowther Road
1908	Moss, Miss	The Grange, 52, Westby Road
1919	*Mull, Mrs. E.*	18a, The Triangle
1915	Muncaster-Jones, Thos.	Hillingdon, Brunstead Road
1915	Muncaster-Jones, Mrs.	,, ,,
1915	Muncaster-Jones, Miss	,, ,,

N

1903	oNeale, J., B.A.	Clonenagh, Montagu Rd., W. Southbourne
1910	Neale, Mrs.	,, ,, ,,
1910	Neale, Miss D.	,, ,, ,,
1918	*Neale, Miss Jessica*	,, ,, ,,
1918	*Neale, Miss C. M.*	14, Carysfort Road
1912	Neave, Mrs.	Lingdale, 73, Lansdowne Road
1912	Neave, Miss	,, ,,
1905	Neve, Miss G.	The Haven, Sea Road, Boscombe
1914	[Nicholl, G. B. T., J.P.]	Santos, Capstone Road
1914	Norton, John J.	Ashton Court, Branksome Park
1914	Norton, Mrs.	,, ,,

O

1917	Odlum, Walter Edwd.	Savoy Hotel, Bournemouth
1917	Odlum, Mrs.	,, ,, ,,
1917	Odlum, Miss Doris Maude, B.A.	,, ,, ,,
1910	Oke, A. W., B.A., LL.M., F.G.S., F.S.A.	32, Denmark Villas, Hove, Brighton

1913	Oliver, Mrs. E.	Teviotdale, Milton Road
1903	oOrd, Dr. W. T., F.G.S.	Bramber, 18, Littledown Road
1918	AOrmerod, Miss Doris	Bournemouth School for Girls, Lansdowne
1919	*Ottaway, Ernest W.*	252, Old Christchurch Road
1918	*Owen, Price*	Fern Lodge, St. Michael's Road
1918	Owen, Mrs. S. Walshe	6, Irving Road

P

1903	oPainter, Hubert, B.SC., F.C.S.	29, Talbot Road, Winton
1904	Painter, Mrs.	,, ,,
1919	*Parker, Jas. Archibald Douglas*	Brackenhill, Buccleuch Road, Branksome Park
1919	*Parker, Miss Mary*	The Cliff, 13, Southwood Avenue, W. Southbourne
1918	[Parkyn, Mrs. D. Adamson]	2, Cliftonville, Exeter Road
1910	Pate, Rev. J.	Spencer House, Constitution Hill, Parkstone
1918	Pearson, John Armstrong	1, Cecil Avenue, Richmond Park
1909	Pechell, Sir A Brooke, Bart.	c/o Messrs. Holt and Co., 3, Whitehall Place, S.W.1.
1915	Penrose, Dr. Francis Geo., M.D., F.R.C.P., F.Z.S., M.B.O.U.	Sefton Hall, Chine Crescent Road
1916	Penrose, Mrs.	,, ,,
1916	Penrose, Miss Frances	,, ,,
1916	Penrose, Miss Marcia	,, ,,
1917	Pepworth, W. H.	Haylands, North Walls, Winchester
1912	Pestell, Miss	Engelberg, Surrey Road
1918	*Pewtress, J. B.*	5, King's Park Road
1918	*Pewtress, Mrs.*	,, ,,
1911	Phillips, Mrs.	43, Alumhurst Road
1912	Philpott, Mrs.	c/o Miss Cheere, 58, Barkston Gardens, S. Kensington, S.W.5
1918	Platnauer, Capt. H. N.	St. Olaf, West Overcliff Drive
1919	*Pollard, Mrs.*	Woodlands, 14, Percy Road
1914	Pollock, Mrs.	43, Wellington Road
1909	APovah, Edwin	68, Parkwood Road
1914	[Powell, M.]	Edenhope, Chessel Avenue, Boscombe Manor
1909	Preston, Donald W.	Bank Chambers, Yelverton Road
1916	Preston, G. A.	Chalfont, 44, Belle Vue Rd., Southbourne
1912	[Price, Miss Annie N.]	Shelford Lodge, 19, Grand Avenue, West Southbourne
1911	Pullman, A.	Wonersh, Hathaway Road
1918	Punch, Cyril	60, Wellington Road

R

1915	ARainer, A. J.	6, King's Park Road
1915	Ramsay, Miss	Redroofs, Ipswich Road
1912	Rankin, W. Munn, M.SC. (Leeds), B.SC. (Lond.)	Municipal College, Lansdowne
1916	Rankin, Mrs. Munn	Stoneleigh, Heron Court Road
1917	Ranshaw, Miss E. M.	9, Warren Road
1904	†Ransome, Dr. A., M.A., F.R.C.P., F.R.S.	43, Portchester Road
1918	*Elected an Honorary Member	
1918	*Ratcliffe, Mrs.*	Brooklands, 32, Branksome Wood Road
1905	*Rayner, J. F., F.R.H.S.	Swaythling, Southampton
1905	Reid, Mrs. Alfred	Capital & Counties Bank, Boscombe

1919	*Reeves, E. J.*	Hillside, King's Avenue, Parkstone
1918	Richards, Miss Elsie E. B.SC. (Lond.)	Felsted, 40, Tregonwell Road
1916	Roberts, Hy. Astley, B.A. (Lond.)	Shalvah, Wilfred Road, Boscombe Manor
1918	*Roberts, Mrs.*	,, ,,
1916	Roberts, P. E., J.P.	Northover, Dunbar Road, Talbot Woods
1916	Roberts, Mrs.	,, ,, ,, ,, ,,
1916	Roberts, Miss	,, ,, ,, ,, ,,
1915	[Roberts, Rev. V. C., B.A.]	41, Parkwood Road
1910	Robertson, Mrs.	Struan, 66, Middle Road
1910	*Rogers, Rev. Moyle	Chetnole, 11, Grosvenor Road
1905	Rogers-Barns, Miss	Bevois Cottage, 25, King's Park Road
1914	Rooke, Miss S. G.	Norbury, 53, Paisley Road
1903	[oRooper, Miss C. Agnes] deceased	Pen Selwood, 13, Gervis Road
1914	*Roper, Miss Ida M., F.L.S.	4, Woodfield Road, Redland, Bristol
1911	Ross, Rev. T. S.	Lennox, 16, Foxholes Road, Southbourne
1907	Ross, Col. W. H.	Ambleside, 9, Dean Park Road
1916	Rothwell, Mrs.	Whytton, Penn Hill Avenue, Parkstone
1906	Russell-Wright, Rev. T., M.A.	92, Richmond Park Road
1912	Rutherfurd, R. C.	Bourne Hall Hotel
1910	Rutter, G. H., M.B.	Roxbury House, 22, Poole Road
1916	Ryley, S., Clement	The Square, Wimborne

S

1910	ASaunders, Hugh A., B.A., F.R.G.S.	Brookfield House, Swanage
1913	Saunders, Miss L. Metta	Pine Cottage, Chester Road, Branksome Park
1917	Saunders, Mrs.	c/o Dr. Ley, 62, Herberton Road, West Southbourne
1912	Scarlett, Miss A.	Fermoy, St. Alban's Avenue
1912	Scarlett, Miss K.	,, ,,
1912	Scarlett, Miss M.	,, ,,
1908	AScattergood, J.	Alma Road Council School
1914	Scholes, Denton	Craigmoor, 7, Branksome Wood Road
1915	Scholes, Mrs.	,, ,,
1904	Scott, J. H., M.E., M.I.M.C.E.	Kirkby, Linwood Road, Charminster Park
1918	[Scott, John, J.P.] deceased	Rawdon, Hinton Road
1905	Scott, W. H., M.A.	Hendall, Westminster Road
1918	*Sells, Leonard P.*	41, Cotlands Road
1916	ASeeviour, G. C., A.C.P., F.R.H.S.	St. Peter's School House
1914	Sharp, Chas.	Langdon Road, Parkstone
1919	*Sharp, Miss Emily*	,, ,,
1919	*Sharp, Miss Frances*	,, ,,
1903	oSherring, R. V., F.L.S.	Hallatrow, near Bristol
1907	Sherring, Miss O. L.	,, ,,
1914	Sidgwick, Chas.	Lindsay House, Lindsay Road, Branksome
1914	Sidgwick, Mrs. C.	,, ,, ,,
1915	Simcox, Miss Winifred	43, St. Clement's Road
1916	Simpson, Rev. E. J. Douglas, M.A.	Maesbury, 3, Cavendish Road
1918	*Smith, Dr. Horace,* M.A., M.D. Cantab.	Sunnyhurst, 7, Dean Park Road
1918	[Smith, Mrs. Isaac]	2, Cliftonville, Exeter Road
1918	Smith, Miss Mary A.	Woodside, St. Alban's Crescent
1917	Smith, Percy	The Club, Bournemouth
1918	*Smith, Mrs.*	,, ,,
1918	*Smith, T. Templeton,* B.SC.	34, Cotlands Road
1918	*Smith, Mrs.*	,, ,,

1914	Smyth, Dr. W. Johnson, M.D. (Edin.)	Pirbright, West Cliff Gardens
1912	Smythe, J. H. Ralph, J.P.	Willstead, 22, Cavendish Road
1915	Smythe, Mrs.	,, ,,
1916	Smythe, Miss Kathleen Mary	,, ,,
1912	Solly, Rev. Hy. Shaen, M.A.	Southcote, 76, Alexandra Road, Parkstone
1918	A*Sothcott, Miss*	St. Andrew's Girls' School
1917	Spencer, F. M.	22 St. Winifred's Road
1909	Spencer, J. F.	Glenthorne, 73, Richmond Park Road
1917	ASpry, Miss Alice G., LL.A.	60, Fitzharris Avenue
1918	[Standen, A. W.]	27, Methuen Road
1917	[Stell, Miss Emily]	Gwynfa, 4, Suffolk Road South
1916	Stiff, Sydney Jas., B.SC.	Nordon House, Corfe Castle
1916	Stiff, Mrs. F. L.	,, ,,
1916	Stiff, Miss F. A.	,, ,,
1908	Stokes, R.	Laverstock, Cliff Road, Boscombe
1918	*Story, F. N.*	Storyland, Warren Edge Road, Southbourne
1918	*Story, Mrs.*	,, ,,
1918	Stuart, Capt. J. F., R.N.	Chester House, Chine Crescent Road
1918	Stuart, Mrs.	,, ,,
1918	*Sumner, Heywood, F.S.A.	Cuckoo Hill, South Gorley, Fordingbridge
1911	Swain, H. E.	Sorrento, Studland Road
1906	Swallow, E.	Westridge, Sandbanks, Parkstone
1916	Swayne, Francis Thos.	24, Stourcliffe Avenue, W. Southbourne
1916	[Swinney, A. J. G., M.E., M.INST.M. AND M.] deceased	117, Richmond Park Road
1905	Sworn, Mrs.	Normandale, 63, Lansdowne Road
1913	Sykes, Mrs.	Oak Lodge, Talbot Avenue
1913	Sykes, Miss	,, ,,

T

1918	Tanner, Mrs. Edwd.	Normanton, 27, Marlborough Road
1916	Tarr, Miss M. K.	Sandsfoot, Chester Road, Branksome Park
1911	Tatchell, Leonard	43, Spratt Hall Road, Wanstead E.11.
1918	*Taylor, J. Easton*	21, Stourwood Avenue, W. Southbourne
1918	*Taylor, Mrs.*	,, ,,
1915	Taylor, F. B., B.A.	Thurgarton, 55, Grand Avenue
1916	Taylor, Mrs.	,, ,,
1916	Taylor, Miss Mary Angela	,, ,,
1916	Taylor, Miss Mary Winifride	,, ,,
1915	Taylor, Jas.	61, Lansdowne Road
1919	*Taylor, Miss Mary E.*	,,
1919	*Taylor, Lieut. W. R.*	Woodlyn, Branksome Avenue
1917	Thickett, Mrs. J. H.	22, Hamilton Road
1918	Thomson, Alfred S.	Sunnybrae, East Avenue, Talbot Woods
1911	Thomson, Mrs. Roberts	Monkchester, 17, Manor Road
1919	*Thompson, Thomas*	Basing, 24, Littledown Road
1919	A*Thompson, Wm.*, M.A.	Meersbrook, Portland Road, Winton
1918	*Thompson, W. W.*	Sledmere, 19, Cavendish Road
1918	*Thompson, Mrs.*	,, ,,
1918	*Thompson, Miss*	,, ,,
1918	*Thompson, Mrs. A. H.*	,, ,,
1916	Thoroton, Rev. L .E. W.	Hill House, Spencer Road, Canford Cliffs
1911	Tickell, Miss S. M.	Pinewood, 56, Stourcliffe Avenue, West Southbourne
1916	[Tottenham, Rev. Chas. Edwd.]	Athelstan, Queen's Park Road
1911	Towsey, Miss E. L.	Moseley, 20, Owls Road, Boscombe
1918	[Tristram, Canon, J. A., D.D.]	Killeen, Lakeside Road, Branksome
1918	[Tristram, Mrs.]	,, ,,
1911	Turner, J. E.	Bramley, Surrey Road
1914	Twemlow, Miss Emily E.	Devon Lodge, 83, Alumhurst Road

U

1912	Usherwood, Rev. Canon T. E., M.A.	Bagdale, Parkstone

V

1913	Veale, Miss Alice G.	Fairdale, Howard Road
1910	Veale, Miss L. H.	,, ,, ,,
1910	Veale, Miss Mary Christina	,, ,, ,,
1912	Veale, Miss Bertha	Lexden, 15, Richmond Wood Road
1917	Veale, Miss Clara M.	,, ,, ,, ,,
1908	Vernon, Lieut.-Col., A. H., L.R.C.P., F.R.C.S.	1, Carnarvon Crescent, Boscombe
1918	*Vernon, Mrs.*	Drayton, Queen's Park Gardens
1918	*Vernon, Miss*	,, ,,
1919	*Vernon, E. K.*	Milano, 43, Cavendish Road
1919	*Vernon, Mrs. M. G.*	,, ,,
1918	*Vickers, Herbert U.*	32, Lowther Road
1909	[Vipan, Miss Dora]	5, McKinley Road
1918 A	*Vorse, John*	School House, Hinton Admiral, Christchurch

W

1903o†	Waddington, H. J., F.L.S.	Moreton, 107, Lowther Road
1918	*Elected an Honorary Member	
1916	Walby, Arthur Edwd.	Netherton, 2, Dean Park Road
1919	*Walker, Chas. H. H.,* M.A. OXON., F.C.S.	Glenawe, 2, Oban Road
1919	*Walker, Mrs.*	,, ,,
1918	Walker, Robt. S.	Ellesborough, Ormonde Road, Branksome Park
1918	Walker, Mrs.	,, ,, ,, ,,
1918	Walker, C. B. Osborn	,, ,, ,, ,,
1918	Walker, Miss G. M.	,, ,, ,, ,,
1913	Wallace, Wm. G.	Ashley Chambers, Ashley Road, Boscombe
1912	Walter, Mrs. G. P.	Rusholme, 10, St. Anthony's Road
1909	Warr, Miss Ada	Cottesmore, Pokesdown Hill
1905	Waters, A. W., F.L.S., F.G.S.	Alderley, 2, McKinley Road
1906	Waters, Mrs.	,, ,,
1912	Watts, Col. Sir Wm., K.C.B.	The Priory, 53, Branksome Wood Road
1918	*Webb, Mrs. Nasmyth*	Bibury, Wilderton Road, Branksome Park
1914	Webber, A. E.	28, Tower Road, Boscombe
1909	Webster, Rev. T.	Devonia, 2, Chatsworth Road
1917	Webster, Mrs.	,, ,,
1906	Wells, H. B.	Stalham, 16, Studland Road
1913	Wetherell, Miss	Triana, 21, Harvey Road, Boscombe
1918	*Whitaker, S.*	22, Somerset Road, Boscombe
1918	Whitehead, Chas.	Heathfield, 8, Cambridge Road
1918	[Whitehead, Mrs.]	,, ,,
1918	[Whitehead, Mrs. Francis]	2, Cliftonville, Exeter Road
1918	Whitehead, Miss	,, ,,
1911	Whiting, Albert	Rozel, 7, Pinecliffe Avenue, West Southbourne
1916	Whyte, A. C.	Byberry, Roslin Road
1916	Whyte, Mrs.	,, ,,
1916	Whyte, Miss Mina C.	,, ,,
1916	Whyte, Miss Mary N.	,, ,,
1913	Willes, W. A.	Elmwood, Cranborne Road
1915	Williams, Dr. C. E. Campbell	Branksome Chine House, Beech Road Branksome Park
1915	[Williams, Mrs.]	,, ,, ,, ,,

1917	Williams, Hy., M.V.O., I.S.O.	Kinfauns, St. John's Road, Branksome
1918	*Wing, Miss*	11, Littledown Road
1917	Wingfield, T. R.	12, Suffolk Road
1914	Wood, W. H.	Arosa, Tower Road, Branksome Park
1916	Wood, Mrs.	,, ,,
1918	*Wood, W. B.*	,, ,,
1918	[Wood, Mrs. Wm.]	Highcliff Hotel, West Cliff
1905	Woodhouse, W. J., A.C.P.	35, Chatsworth Road, Malmesbury Park
1918	Woodhouse, Mrs.	,, ,, ,,
1914	A Woodhouse, Wm.	Attleborough, 34, Wimborne Road
1917	Woodward, Chas. H., A.M.I.E.E.	Kenistone, Richmond Park Crescent
1909	Woollacott, J. C.	Solent View, 141, Belle Vue Road, Southbourne
1919	*Wright, Capt. H. Newcom*	48, Wellington Road

Y

1908	Yates, R. P.	Woodmanton, 35, Wellington Road
1918	Young, Andrew Aytoun	35a, Branksome Wood Road
1918	Young, Mrs.	,, ,,
1917	A Young, Miss Annie	6, Salisbury Road, Boscombe
1918	*Young, Miss F. E.*	The Briars, 71, Lowther Road

RULES OF THE

Bournemouth Natural Science Society.

Amended October, 1917.

1.—The title of the Society shall be THE BOURNEMOUTH NATURAL SCIENCE SOCIETY. Title

2.—The objects of the Society shall be the promotion of the study of Science in all its branches, by means of Lectures, Field Meetings, the Reading and Discussion of Papers, and the formation of Sections of its members devoted to any particular branch of the Society's work, or by any other means that the governing body of the Society shall deem advisable. Objects

3.—The Society shall encourage the making of reports on any plant, animal, or object of interest, and where the Society may deem it necessary, shall take such steps as may be advisable to secure any such plant, animal, or object of interest from injury, extinction or destruction.

4.—The Society shall consist of Ordinary, Life, Associate, and Honorary Members. Members

5.—There shall be a Council of the Society consisting of the Hon. Treasurer, one or more Secretaries, Honorary or otherwise, the Vice-Presidents who have filled the office of President, the Hon. Librarian, the Hon. Editor, the Hon. Curator, the Chairmen of Sections and twelve elected Members. Council

The Council shall have the general management of the Society. At all Meetings of the Council, five shall form a Quorum. The Council shall elect their own Chairman and Deputy-Chairman for the Year, and shall have power to fill up any vacancies in their number which may occur from time to time. The Council shall have power to appoint Committees to deal with any business that may be delegated to them.

The Chairman, or in his absence the Deputy Chairman, at all Meetings of the Council shall have an original and a casting vote.

The Council shall have the control of the Funds of the Society.

6.—The Executive Officers of the Society shall consist of the Chairman and Deputy Chairman of Council, Hon. Treasurer, and one or more Secretaries, Honorary or otherwise. Executive Officers

7.—The Ordinary, Life, and Associate Members of the Society shall be proposed by an existing Member, and seconded by another existing Member, and notice shall be sent to one of the Secretaries of the Society of the names and address of the nominee, and the names of the proposer and seconder. Any such proposed new Member shall be voted for at the next ensuing Council Meeting, and if two-thirds of the Council present and voting shall vote for the proposed new member, such candidate shall become a Member upon payment of the Annual Subscription, and shall receive a card of membership (not transferable) entitling him or her to attend the Meetings of the Society. Members joining during August and September shall be given a card of membership to September 30th of the following year.

8.—Ordinary Members shall pay an Annual Subscription of Ten Shillings, due on the first day of October in each Year. The Annual Subscription for Adult Members of the same family, not exceeding four and residing in the same house, shall be Twenty Shillings, each Member being elected in the usual manner and each receiving a card of membership. Ordinary Members.

Life Members.

9.—The Subscription for Life Members shall be Five Guineas. Any Ordinary Member who shall have commuted his Subscription, as provided for in this Rule, shall become a Life Member, but shall not by reason thereof have any different rights from those of an Ordinary Member.

Associate Members.

10.—Associate Members are those who by payment of an Annual Subscription of Two Shillings and Sixpence are entitled to attend all the General Meetings and Excursions of the Society. They also have the privilege of attending the Meetings and Excursions of one particular Section they may select at the time of their Election, or at the commencement of each Session, their choice being notified by them to the Hon. Treasurer. The following are entitled to become Associate Members on Election by the Council:—

(a) Teachers in schools who are still engaged in the active duties of their profession.

(b) Persons, who in the opinion of the Council, although unable to pay the fee for full membership, are by their acknowledged scientific tastes or attainments, likely to prove useful working Members of the Society.

On further payment of Two Shillings and Sixpence Associate Members are admitted to the Meetings and Excursions of all the Sections.

Associate Members shall have no power of voting on the affairs of the Society, or of holding office.

Honorary Members

11.—Any person who is either distinguished in Science or has rendered any special service to the Society, may be elected an Hon. Member. Such Hon. Members shall be proposed and elected in the same way as Ordinary Members.

Visitors

12.—Any Visitors introduced by a Member or producing a Member's card, may be admitted to any Meeting or Excursion of the Society on entering their names and that of the introducing Member in the Society's Visitors' Book. Such privilege not to be granted more than twice to any one person in each Session.

On the recommendation of the Council or Committee authorised by it, Visitors to Bournemouth desirous of attending the Meetings or Excursions of the Society, may obtain a ticket of admission for the Winter or the Summer Meetings or Excursions at a charge of Seven Shillings and Sixpence. Application to be made to the Hon. Secretary for submission to the Council or Committee authorised by it.

13.—Any Members whose subscriptions are unpaid at the end of the financial year (September 30th), on notice to that effect in writing having been given to them by the Hon. Treasurer, shall be reported to the Council, who shall have the power of removing their names from the list of members.

14.—Resignations should be in writing, and addressed to one of the Hon. Secretaries, and until such are received by them, Members remain liable for their subscriptions.

15.—The power of expulsion of a Member from the Society for objectionable conduct shall be vested in a General Meeting of the Society, provided the Council has caused special notice to be given on the circular convening the Meeting, and that two-thirds of those present and voting agree thereto.

16.—The Council shall arrange all Lectures, Papers, Demonstrations and Exhibitions of Specimens, etc., both for the General and Sectional Meetings of the Society, and shall decide upon all General and Sectional Excursions.

17.—The Council shall have power to form any Section or Sub-Section, to consist of not less than six Members, for the study of any special subject which the Council may deem within the scope of the Society's work. They shall annually appoint the Chairman of any such Section or Sub-Section on the nomination of that Section or Sub-Section. Sections.

A Section shall consist of those Members who attend in each year not less than three meetings of such Section.

The Chairman of each Section shall appoint a Secretary, who in addition to the ordinary secretarial duties shall keep a list of the Members of the Section.

18.—Each Sectional Chairman shall be responsible for the preparation and arrangement of each Sectional Meeting and Excursion, and shall submit details of the same to the Hon. Secretary for submission to the next ensuing Meeting of the Council. He shall submit accounts of costs incurred by him to the Hon. Treasurer, after each Meeting or Excursion, who shall lay the same before the Council at their next ensuing Meeting. At the first Meeting of each Section or Sub-Section in the Year, after the Annual Meeting, such Section or Sub-Section shall nominate its Chairman. Sectional Meetings.

19.—A book for each Section shall be provided by the Secretaries to be kept at the Society's Room; each Chairman of Section, or his Secretary shall enter therein an account of each Meeting, with number of Members attending, and notes of any matters of interest observed or discussed. Such book to be presented at each Meeting of the Council. Every Chairman of Section shall report at each Meeting of the Council. Every Chairman of Section shall report as to the work of his section at the Annual Meeting of the Society.

20.—Any Members of the Council other than Ex-officio Members who shall have failed to attend half the Meetings of the Council held in any one year, provided that such non-attendance be not caused by illness or absence abroad, shall not be eligible for re-election, except by desire of the Members present at the Annual Meeting.

21.—The President need not necessarily be selected from Members of the Society, and shall be elected annually. He shall deliver an Address at as early a date in the Winter Session as can be arranged. The President

22.—Any Member of the Society who, in the opinion of the Council, shall have rendered distinguished service to Science or to the Society, shall be eligible for election as a Vice-President at the Annual Meeting, as long as he or she remains a Member of the Society. Vice-Presidents

23.—Each of the Vice-Presidents in rotation shall be requested to act as Chairman at the General Meetings of the Society.

24.—The Secretaries shall perform all the usual secretarial work; shall keep minutes of all Council Meetings, and the Annual Meeting, and a synopsis of all General Meetings. They shall cause a programme of each General Meeting to be sent to every Member seven days at least before each such Meeting. They shall make all preparations for carrying out all General Meetings and General Excursions, at which they shall receive from each Member his or her share of the day's expenses, and therefrom defray all costs of the Meeting. Any surplus of such collection shall go to the General Fund, and any deficit be defrayed out of that fund. They shall keep an account of all out-of-pocket expenses incurred in arranging Meetings and otherwise. They shall give notice of their election to all new members, they shall furnish a copy of the Annual Report to all Members who have paid their subscription, to Honorary Members, and to any such Scientific Societies as the Council may from time to time appoint to receive them. Secretaries

Treasurer

25.—The Honorary Treasurer shall have the custody of the General Funds of the Society. He shall prepare a Financial Statement at the end of each Financial Year to be presented to the Council at the Meeting next preceding the Annual Meeting. He shall receive and acknowledge all Subscriptions, and shall issue tickets of Membership to all persons who are duly elected and have paid their Subscriptions. He shall bring before the Council any accounts that are due for payment. After presentation of the Balance Sheet to the Council, he shall submit it to the Auditors and lastly to the Annual Meeting of the Society.

26.—At the Annual Meeting and at all General Meetings of the Society, not less than ten Members shall form a quorum.

Annual Meeting

27.—At the Annual Meeting, which shall be held in the month of October, the President, the Executive Officers (except the Chairman and Deputy Chairman of the Council), the Hon. Librarian, Hon. Editor, Hon. Curator, twelve Members of Council and two Auditors for the ensuing year shall be elected (either Auditor having the power to audit the accounts in the unavoidable absence of the other). At this Meeting the Council's Report of the past year, together with those of the Chairmen of Sections, and the Hon. Treasurer's statement of accounts, duly signed by the Auditors, shall be submitted.

28.—Alteration in the Rules shall be sanctioned by a majority of not less than two-thirds of the Members present and voting at the Annual Meeting, or at a Special Meeting called for that purpose, and no alterations shall otherwise be made.

29.—Notice convening an Annual or Special Meeting, together with any proposed alterations in the Rules, shall be given to Members at least seven clear days before such Meeting be held. Notice of General Meetings, and Council Meetings (if possible) shall be given at least seven clear days beforehand.

30.—On a written requisition, signed by at least five Members of the Society, the Council shall call a Special Meeting to consider any question as to the affairs of the Society, such Meeting to be called within three weeks of the receipt of the requisition, and at least seven days' notice shall be given to the Members. At such Meeting no other business than that mentioned on the requisition, and on the notice convening such Meeting, shall be considered.

❧

Presidential Address.

Delivered December 1st, 1917, by

Sir JETHRO J. H. TEALL, M.A., D.Sc., LL.D., F.R.S.

"Some Aspects of Egyptian Geology."

The inaugural meeting of the Session, 1917-18, was held at Holy Trinity Hall. The new President was warmly welcomed by the members present and, after suitably asknowledging the cordial reception with which he had been greeted, he proceeded with the address, a report of which follows:—

Modern Egypt forms part of the great desert plateau of North Africa. It is approximately 400,000 square miles in extent, but only about 12,000 miles are permanently habitable, the rest being either pure desert or semi-desert, only capable of supporting a small nomadic population.

Herodotus, who visited the country about 2,400 years ago, correctly described Egypt proper, or the permanently habitable portion, as "the gift of the Nile." The delta has been won from the Mediterranean by the deposits brought down by the river, and the same deposits extend up the valley. If they were removed the sea would cover the whole of the delta and extend for a considerable distance up the valley as it has done in comparatively recent geological times.

The oldest rocks of Egypt are exposed at the cataracts, in the Red Sea Hills and in the southern part of the Sinai Peninsula. They constitute the "old floor" on which the later sediments have been deposited· It was mainly of these later sediments and of the physical features of those portions of the country in which their relics are now found that he proposed to speak. They belonged for the most part to the Cretaceous and Tertiary periods.

A Continent composed of granite, diorite, schists and other ancient rocks had existed in this part of the world in Lower Cretaceous times, while sea lay to the north. The Upper Cretaceous period—to which our gault, upper greensand, and chalk belong—was ushered in by an advance of the sea from the north. The first deposits formed upon the old land surface were of a littoral character, consisting chiefly of sand. The process was continued throughout Cretaceous times, and the successive belts of sediment succeeded each other, as it were, in a series of waves. Clay followed the sand, then marls, and finally limestones of organic origin, until a pile of nearly horizontal strata had accumulated in which the vertical succession, or the succession in time, corresponded, so far as lithological characters are concerned. to the horizontal succession, or the succession in space, of the sediments which surrounded the old Continent. During this long period changes had taken place in organic life due partly to the migrations caused by such changing conditions as the increasing depth of the sea and the increasing purity of its waters. That was in brief, and without the qualifications that he would have liked to introduce, if time had permitted, the story of Egypt, and not only of Egypt but also of a large part of North Africa and Arabia, during the time that the chalk was accumulating in England.

At the close of the Cretaceous period important changes took place both in organic life and in physical geography, and different parts of Egypt were affected differently. In the south the Lower Eocene rocks appeared to have succeeded the Cretaceous rocks witnout a break, but in the north the latter had been folded, faulted, raised above sea level, and portions of them removed by denudation before the Middle Eocene rocks were deposited upon them. The passage from Eocene to Oligocene times was marked by a gradual transition from marine to terrestrial conditions, and in the transitional deposits a remarkable assemblage of animal remains, including the ancestors of the elephant and mastodon had been found. Sea once more overspread the land in Miocene times.

The President then proceeded to describe the physical features of the Nile valley from the second Cataract to Cairo, illustrating his remarks by a series of lantern slides. He showed that at the second cataract the flow of the river is interrupted by innumerable islands of diorite and other rocks belonging to the old floor, that the country on both sides of the river is formed of the littoral deposits of the Upper Cretaceous period—the Nubian Sandstone —and that these deposits rest unconformably on the rocks of the old floor. He pointed out that, below the Cataract, the river flows uninterruptedly in a broad stream between banks of alluvium backed by a dissected plateau of Nubian sandstone; that the stratification was nearly horizontal; that out of this great rock sheet hills had been sculptured. manly by the action of the wind; that the hills sometimes possessed the form of table mountains, sometimes that of isolated pyramids, and that between these two types every intermediate form could be observed. Referring to the table mountain landscape, as it is sometimes called, he said "We are thus able to picture in imagination the process by which a plateau may, in the course of ages. be destroyed. We see, as it were, the process going on before our eyes. First a plateau, then table-mountains, then truncated pyramids whose summits reach the level of the old plateau, then lower pyramids, then mounds, and finally a plain corresponding to the base level of erosion."

"The hills are shadows, and they flow
From form to form, and nothing stands;
They melt like mist, the solid lands.
Like clouds they shape themselves and go."

The physical features in the neighbourhood of Assuan were then described and illustrated, and afterwards the journey down the Nile was continued. It was pointed out that the Nubian sandstone disappears from view owing to a very gentle northerly dip; that, at Luxor, the western side of the valley is bounded by the edge of the Libyan desert, formed by Eocene limestone; and that water eroded valleys descend from the level of the plateau. Views in two of these valleys were shown and attention was called to the fact that their lower portions have been excavated in the debris brought down by rainstorms from the high ground on the west. In dealing with the physical features of the Nile valley between Luxor and Cairo, the President called attention to the remarkable regularity of the stratification.

To a British geologist. accustomed to deal with folded and faulted rocks and with rapid changes in lithological character, this is a feature which most impresses him in a journey down the Nile. He looks for faults in the cliffs and sees none. The only disturbances that he sees appear to be slips down the steep faces. For hundreds of miles the stratification is parallel, so far as the eye can tell, with that of the Nile alluvium and with the surface of the water on which he is sailing. Nevertheless, the average slope of the valley is slightly less than that of the rocks so that he is ascending in the stratigraphical sequence. Occasionally the line of cliffs is broken where a lateral valley debouches from the desert plateau. Such a plateau is usually dry; but at intervals, it may be of six or seven years, owing to the cloudbursts on the Red Sea Hills, it carries down to the river a raging torrent of water, mud and stones of various sizes.

Having traced the course of the Nile from the second Cataract to Cairo, he then described the structure of the Libyan desert plateau, and of the Kharga oasis, illustrating his remarks by photographs of the desert, of sand dunes and of the effects of wind erosion.

Referring to the Miocene rocks of Northern Egypt, he briefly summarised the results embodied in a recent "Report on the Oilfields Region of Egypt" by Dr. Hume, the director of the Egyptian Geological Survey. "These Miocene rocks," he said, "are of great interest both from a scientific and from an economic point of view. In the Gulf of Suez region they present us with a type of structure wholly different from that which prevails in the great desert plateaux of North Africa and Arabia; and borings through them have yielded considerable quantities of oil at Jemsa, near the entrance to the gulf, and more recently at Rarquada, about 30 miles further south, near the shores of the Red Sea. They consist not only of sediments formed in the open sea, but also of a great thickness of salt and gypsum. It seems clear that both as regards age and mode of formation they are more or less allied to those of the Carpathian salt beds; and probably also to the similar beds of Armenia, the Iranian tableland, the valley of the Tigris, and the coast of the Persian Gulf.,With such deposits some of the more important oilfields of the world are most intimately associated, and we must all wish success to those who are engaged in developing the Egyptian oilfields. The latest reports from Rarquada are most encouraging."

Speaking of the origin of the Nile Valley, he expressed his opinion that it was a valley of erosion—not a " rift " valley, and concluded as follows :—" But the history of the valley has yet to be written. Its formation certainly covers a long period for the lower part of it formed an arm of the sea in Pliocene times. Deposits containing fossils of that period, some of which are allied to forms now living in the Red Sea, are found on its flanks near the Giza pyramids and have been recorded from several other places farther south.

"I have visited the country on three occasions simply as a tourist, and am therefore largely indebted to the work of others for the facts I have laid before you. I have never spent more delightful holidays. A visit to Egypt seems to lengthen one's life, for every day and all day one meets with novel experiences; and even one travels with a personally conducted party, as I did on the first occasion, one has only to ignore some of one's companions to thoroughly enjoy one's self. There is certainly no other way by which one can see so much of the people, of the archæology, and of the geology of the country in so short a time."

Scientific and Literary Reunion.

An important " re-union " took place on Saturday afternoon, June 8, between the Natural Science Society and the Literature and Art Association, and was held in the Municipal College, Lansdowne, from 3 to 6.30 p.m. Numerous members of both bodies attended. A large number of exhibits were shown.

By the Zoological Section :—About one-third of the Batley collection of Birds' Eggs, arranged and named by Mr. W. Parkinson Curtis and his brother, Mr. E. Harker Curtis. Local Marine Shells by Mr. T. E. Belcher.

By the Geological Section :—A selection of the Dent Collection of Barton fossils. Flints, Paleolithic and Neolithic by Mr. J. H. Scott. Flints of the Bronze Age by Mr. Hy. Backhouse. Eolithic Flints by Mr. B. Harrison. Pictures of Paleolithic (Piltdown Skull), cave, and Neolithic man, enlarged and coloured by Mr. J. H. Scott.. A fine specimen of a stalagmite from the Lambton coal pit, Durham, showing the growth during 60 years, by Mr. Hy. Backhouse.

By the Botanical Section :—A fine display of wild flowers, arranged by Mrs. Rothwell, including a special show of orchids, viz., *Habenaria viridis, bifolia, conopsea, Orchis mascula, maculata, latifolia, ericetorium* and forms of the same. Other specialities were *Pilularia globulifera, Dianthus glaucus, Lithospermum purpureo-coeruleum, Rosa spinosissima.* A collection of leguminous fruits was kindly lent by Mr. T. E. Belcher. An assortment of dried fungi by Mr. J. F. Rayner.

By the Archæological Section:—Reproductions of illuminated MSS. belonging to the British Museum, by Mr. H. J. Ellis. Coins of the Romano-British period, by Mr. W. G. Wallace.

By the Physical Section:—Aniline dyes made in the laboratory of the College, intermediate products from coal, a selection of dye-stuffs in powder form, by Miss Marcia Penrose. A direct vision spectroscope, spectra of metals and Fraunhofer lines, by Mr. Hubert Painter. Spectroscope absorption spectra of photographic screens and certain solutions, Brownian movements, liquefaction of ammonia gas by pressure, by Mr. A. J. Tyrrell.

By the various branches of the Geographical Association:—Local surveys. The Bournemouth branch is undertaking local surveys of the Bournemouth district, and a first contour map was shown as a commencement of a series. Apparatus for teaching practical geography in schools. By Mr. H. J. Waddington—Living and mounted specimens of Culex and Anopheles found in the immediate neighbourhood (under microscope). By Field Marshal Lord Grenfell—Egyptians antiquities and Napoleonic relics. By Mr. W. Parkinson Curtis—Lepidoptera collected at Bridport. By Mr. A. E. Webber—A collection of typical Lepidoptera, including several notable aberrations. By Mr. Ernest Cooper—Books showing the evolution of printing from the 15th to the 20th centuries, including "The Golden Legend" printed Caxton type, "Nuremberg Chronicle," specimen of Baskett Bible; Ptolemy Atlas of 16th century; modern printing, including Kelmscott and Vale Press. By Colonel Ranshaw—Examples of the Prayer Book of the lay people in England, France, Italy, Germany, Spain and Holland before 1534. By Mr. Heywood Summer—An 18th century map of the New Forest.

Hung on the walls of the large hall:—A selection of Mr. Day's historical pictures of Bournemouth. By Dr. F. G. Penrose—Nature study colour photographs on Lumiere autochrome plates. By Mr. Chas. Riddle—Prints and pictures of old Bournemouth. By Mrs. Spencer Bower—Water colours of the New Forest. Water colours by Miss Beatrice Parsons, lent by the Deputy Mayor. Water colours, by Mr. H. Whitcome and the late Mr. A. Bell, lent by the Corporation. Bromoils of Christchurch, by Mr. R. Y. Banks. Old prints and photogaphs, lent by Mr. James Druitt. The above mentioned exhibits were shown in the large hall and the students' library.

In the Society's Room at 3.30 p.m., Mr. C. H. Woodward gave a display of heavy discharges from a large coil, various types of discharge, including lightning protection on high tension transmission lines. Three electric lamps were shown, viz., half watt, one watt and old carbon filament respectively, when the enormous improvement in recent manufacture was thereby demontrated—X-Rays. He also showed samples of the original submarine cable.

At 4.30 p.m. Mr. T. B. Goodall gave a demonstration of "Types of Dentition," and showed examples.

At 5.30 Mr. Jos. Neale gave a short lecture on "The Colours of Beetles," and showed numerous large coloured drawings from life to illustrate the dusky hue of nocturnal beetles, and the concealing and arresting patterns of diurnal species appropriate to their edible or inedible qualities.

During the afternoon light refreshments with tea were served at 6d. per head, of which 190 persons availed themselves.

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Report of General Summer Excursions, 1918.

Bournemouth Pleasure Gardens. June 1st. As a war-time substitute for the usual long-distance General Excursion, a walk through the Bournemouth Pleasure Gardens was organised by Mr. Claude Lyon. At 3 p.m. about 60 members started from the Square, the weather being ideal. Mr. Henry Backhouse, F.R.H.S., pointed out and described many of the more interesting trees and shrubs. On reaching the upper part of the chine Mr. G. de Castro, M.R.C.S., read a short account of the formation of the gardens, and distributed copies of a sketch map representing the described area previous to the year 1800. He also gave an interesting account of the changes in the ownership of the land since the Christchurch Enclosures Acts of 1802-5. After an interval for tea Dr. Penrose, F.Z.S., M.B.O.U., gave a short account of the various species of birds frequenting the Gardens, and read a list furnished by Mr. William Reeves, Miss Durrant's head man, who has worked on the Durrant Estate for 35 years. The list included—owls, jackdaws, jays, green woodpecker, cuckoo, wry-neck, moor-hen, thrushes (two kinds), blackbirds, starlings, robins, various tits, grey, pied and yellow wagtails, ringdoves and herons.

Honeycombe Chine. June 29th. By kind permission of Mrs. Hamilton, of Boscombe Place, a visit was paid on Saturday, June 29th, to Honeycombe Chine. A party of 84 members assembled at Boscombe Pier, and was conducted by Mr. W. Munn Rankin, M.Sc., B.Sc., to the chine, where he gave a description of the Bournemouth cliffs, the rocks of the chine, and the various beds. At the top of the chine Sir Daniel Morris, K.C.M.G., showed several remains of fossils of *Nipadites Parkinsonii,* and one very perfect one which he had himself found, also a specimen of the fruit itself of a species of palm which grows at the mouth of great rivers in the East. The members walked round Mrs. Hamilton's beautiful garden and then dispersed. As Mrs. Hamilton was unavoidably absent the expression of thanks of the party for her kindness was conveyed to her by the Hon. Secretary.

Corfe Castle.
August 8th. A party of 74, conducted by Mr. Harry Pouncy, visited Corfe Castle on Thursday, August 8th. The weather was fine. The conductor gave an address on the history of Corfe and its castle, his hearers having seated themselves in the Castle moat. Mr. Pouncy then led the party on a tour of the ruins, and then showed them the chief features of interest in the town. The Rector (the Rev. W. J. de Kilpeck, M.A.) then took them through the Church of St. Edward, King and Martyr, and showed the magnificent Fourteenth Century stone chimney-piece in the house of Mrs. Hibbs, West Street.

Notes on the Sections and their Work.

Archæological and Historical Section.

Chairman: The Rev. H. Shaen Solly, M.A.
Secretary: H. J Ellis.

On November 13th, 1917, we opened our Winter Session with an exhibition of objects of archæological and historical interest. Among these was a gold cup, probably dating from 1000 B.C., shown by Mr. George, and dug up on an island not far from the site of Troy. Mr. Le Jeune sent an ancient wooden clock and other articles which he presented to the Society. Short accounts were given of everything that was shown, and the feeling was generally expressed that similar exhibitions might with advantage be repeated at intervals.

On December 12th Mr. Heywood Sumner gave an address on "Recent Excavations in the New Forest," illustrating, with maps and drawings, the work which he has himself done in that district, an account of which is now published in book form and has been added to our Library.

On January 30th, 1918, Mr. Kidner gave a lecture entitled "Along the Dorset Heights in the track of Early Man." This was illustrated by lantern slides specially made for the purpose by Mr. Banks.

On February 14th I gave a lecture, illustrated by drawings, on "Early English Miracle and Mystery Plays."

On March 9th, Field Marshal Lord Grenfell gave a lecture entitled "Reminiscences of Egyptian Exploration," dealing mainly with a time when he was Sirdar of the Egyptian Army, and when, waiting to repel an advance of the Mahdi's Army, he had superintended the exploration of some hitherto untouched tombs. Many of the objects then discovered now form part of the loan collection in our room. A report of this lecture appears elsewhere in this volume.

On March 21st Mr. Kidner gave a lecture, a sequel to his previous one, on "The Makers of the ancient Ridgeways and their Civilisation."

On April 3rd I gave a lecture on "Mediæval Builders," illustrated by a large number of specially prepared lantern slides.

On June 8th, at the Reunion then held, our principal contributions were cases arranged by Mr. Wallace to exhibit typical specimens of the Stone Ages and the Bronze Age, and reproductions of illuminated missals shown by Mr. Ellis. Mr. Wallace, after returning the specimens lent for the occasion, has succeeded in getting together some instructive groups of eoliths, paleoliths and neoliths which have a high educational value, and which it is hoped, will find a permanent place in the building.

On June 22nd our section joined the photographic section in an excursion to Sopley Church.

On July 23rd and September 12th, two visits were paid to Hinton Admiral House, where Sir George and Lady Meyrick kindly showed us the objects in their possession found during the excavations at Hengistbury Head. Our party on each occasion was limited to a dozen, and invitations to be present were sent to those members who were known to be interested in archæology. Mr. Brownen addressed the first party, Mr. Sumner the second.

In addition to our sectional work it is fair to note that two General Lectures, one by Mr. Frank Stevens on "The Stone Age," the other by Mr. Pouncy on the "Invasions of England," and also the General Excursion to Corfe Castle, were entirely concerned with subjects belonging to our section.

H. SHAEN SOLLY,
Chairman.

Botanical Section.

CHAIRMAN: [MISS C. AGNES ROOPER.]
THE REV. C. O. S. HATTON, B.A., F.L.S.

The Session has been one of change for the Botanical Section. The Chairmanship, held for so many years by Miss C. Agnes Rooper, became vacant by the death of that lady on May 2nd. On another page will be found an obituary notice in which mention is made of some of the many services which she rendered to the Society. At an excursion held on June 5th it was unanimously resolved that the Rev. C. O. S. Hatton, B.A., should be nominated as Chairman, and, at the next following Council meetings, Mr. Hatton was duly elected. There have also been changes in the Secretaryship. Mr. G. C. Seeviour was Secretary at the beginning of the Session, but found it necessary to resign in consequence of the pressure of other duties. For a short time Mrs. Rothwell took up the office in addition to her special work in connection with the weekly show of wild flowers in the Public Library, and finally Mr. Hatton succeeded in obtaining the services of Miss Elsie E. Richards, B.Sc. (Lond.). In spite of these changes in the officers the work of the Section has been well maintained. Evidence of this will be seen by referring to the list of Botanical lectures and excursions given in the Council's Report.

SPARTINA TOWNSENDI.

It is much to be regretted that, on account of an illness in the autumn of 1918, Mr. R. V. Sherring, F.L.S., has been unable to continue the close investigation of the progress of the Spartina in Poole Harbour which he has carried out for so many years past. He has, however, noted that at Creekmoor Lake in Holes Bay, south of the Weymouth line, there has been considerable activity. Large patches composed of clumps of quite young plants bid fair to form a meadow in the N.E. part of the bay.

HON. ED.

Entomological Section.

CHAIRMAN : F. G. PENROSE, M.D., F.Z.S.
SECRETARY : W. G. WALLACE.

During the Session there were 9 evening meetings, and a good deal of work was done besides in connection with the **Anopheles** investigation.

The first meeting was on November 8th, when the Chairman made a statement on the request of the South-Eastern Union of Scientific Societies, on behalf of the Local Government Board, for detailed information about the distribution of mosquitos in the neighbourhood.

At the second meeting, December 6th, Mr. Wilfred Parkinson Curtis exhibited the wonderful series of butterflies and moths which he had collected at Bridport in the previous June, and gave a detailed description of the relation of the various species to the geological formation of the district.

On January 16th, 1918, Mr. Goodall, at a combined meeting of the Entomological and Zoological Sections, lectured on the work which he had done in former years on gnats and mosquitos, and showed a large number of original slides to illustrate his work. In March he gave another lecture in continuation of the same subject. The next day, January 17th, there was another meeting of the Section for the exhibition of specimens belonging to members of the Section, and meetings for the same purpose were held in February and March.

During March excursions were undertaken to collect evidence with reference to the distribution of mosquitos and gnats in the district, and these were continued almost weekly for this purpose during the remainder of the season : the report on this matter is subjoined.

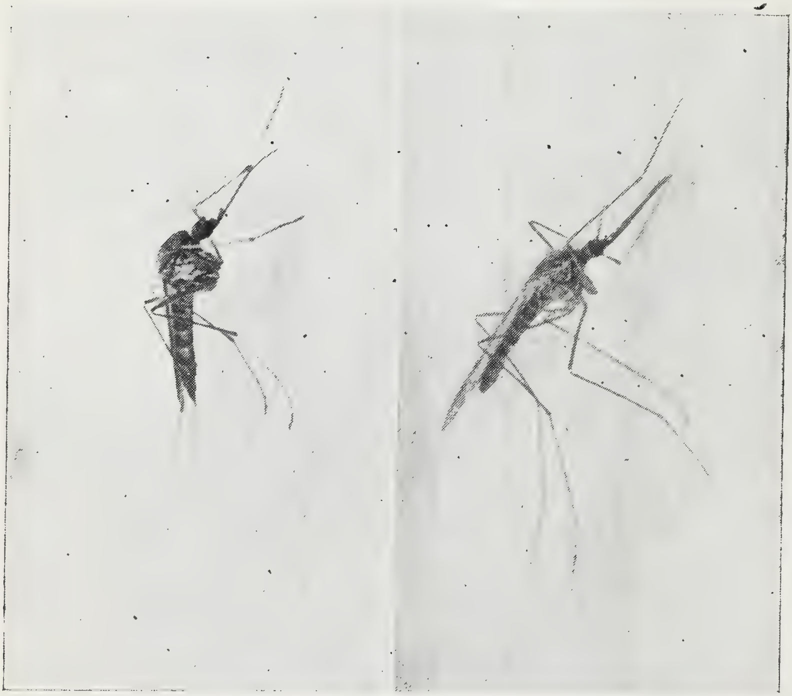
In April, May and June there were the regular monthly meetings for the exhibition of specimens.

At the end of May the Chairman, as the delegate of our Society, attended the meeting of the South-Eastern Union of

BRITISH MUSEUM
NATURAL HISTORY

PLATE IV.

PHOTOGRAPHS TAKEN FROM LIVING SPECIMENS, BY HUGH MAIN, ESQ., B.SC., TO SHOW RESTING ATTITUDES OF A GNAT AND A MOSQUITO.



1. A Gnat.

Ochlerotatus nemerosus. ♀ × 5.

Note the angular position in which the head is carried in relation to the body.

2. A Mosquito.

Anopheles maculipennis. ♀ × 5.

Note that the head and body rest in an almost straight line———.

Scientific Societies. His report appears on another page of this volume.

On June 8th, at the Scientific and Literary Reunion, Mr. Waddington gave a demonstration of his beautiful preparations illustrative of the metamorphosis of the mosquito. Living examples of the larvæ and pupæ of gnats and mosquitos were also shown.

On July 4th there was a discussion on insects injurious to garden crops and fruit trees, with an exhibition of some of the species.

It may be here mentioned that in many parts of the country there were veritable plagues of caterpillars during the late spring and early summer. In this neighbourhood, however, the devastation and loss were not felt, at any rate at all acutely.

There were no excursions, besides those to investigate the distribution of gnats and mosquitos.

F.G.P.

REPORT ON THE PREVALENCE OF ANOPHELES IN THE BOURNEMOUTH AREA.

In 1914, was published on behalf of the Bournemouth Natural Science Society, "A Natural History of Bournemouth and District."

On pp. 234-235 Mr. H. J. Waddington, F.L.S., refers to the presence of Anopheles as follows:—" In addition to the more ordinary larvæ of *Culex pipiens, Corethra plumicornis,* etc., there are to be found here the larvæ of *Culex vexans, Theobaldia annulata* and *Anopheles maculipennis* " . . . " Bournemouth and its adjoining districts of Parkstone and Poole have a rather bad reputation for the prevalence of culicidæ (gnats, etc.). This is hardly to be wondered at, as the larvæ abound in the neighbourhood. The larvæ of *Anopheles maculipennis* are found in abundance in the backwaters at Iford and in the fresh water lake in Poole Park. The larvæ of another species, *Anopheles bifurcatus,* are always to be found in the rainwater tubs in one of the large nurseries at Bournemouth."

During the past year some members of the Entomological Section of the Society have followed up the question of the local prevalence of the two species of *Anopheles* mentioned above.

In January of this year Mr. A. J. Rayner obtained a few larvæ of *Anopheles bifurcatus* from some backwaters of the Avon near Hurn Railway Station for Mr. Waddington. Some of these pupated and hatched a few weeks later.

A communication from Mr. Waddington was read at the Royal Microscopical Society on June 19 last and quoted in the

" English Mechanic and World of Science," No. 2781, July 12, 1918, p. 283, in which he said " that the *Anopheles bifurcatus,* which is a malarial-carrying mosquito, is the only species of which the larvæ survive the winter in England, and any mosquitos found up to the end of May will most probably be of this species. The larvæ are fairly common all through the winter months in ditches near Bournemouth, and are also to be met with in rainwater tubs which contain much vegetable debris. By May these larvæ have all developed. Early in June the very small larvæ of both *Anopheles maculipennis* and *Anopheles bifurcatus,* hatched from newly deposited ova, are easily met with in their proper habitats. The larvæ of the two species may be distinguished by the arrangement of the hairs on the clypeus and the imagines by the wings of *A maculipennis* being spotted, while the wings of *A. bifurcatus* are spotless. The larvæ of *A. bifurcatus* are to be met with in ditches which contain a fair amount of water, the larvæ of *A. maculipennis* in shallow patches of water, in the grass bordering the edges of country roads, and more especially in shallow pools in shady portions of forest-ground, notably in parts of the New Forest in Hampshire " . . .

The first expedition was on March 2, when adult gnats (Culices) only were found. From that time onwards searches were made weekly.

The first larvæ of *Anopheles maculipennis* were taken by Mr. H. B. Wells and Dr. Penrose from the fresh-water lake in Poole Park on June 4. From that date onward until the middle of September larvæ both of *A. maculipennis* and of *A. bifurcatus* have been found in great numbers not only in Poole Park, but in many other permanent ponds and ditches in which there was much vegetation and which were overshadowed by trees.

In the open unshaded pools which are scattered through the heather districts no larvæ were found, although repeatedly searched for.

The larvæ of both species have been found, as stated above, in the fresh-water lake in Poole Park. Elsewhere only one or other of the two species have been found in any given piece of water. The district explored was from Highcliff on the east right round Poole Harbour to the west as far as Studland. Wherever the conditions are favourable apparently throughout the area the larvæ are to be found. In Bournemouth proper, owing to the very few suitable breeding areas, mosquitos (*Anopheles*) are not very common, though there are a good many gnats (*Culices*). No member appears to have come across *A. plumbeus* (*nigripes*).

The following members have assisted in the research :—Mr. Belcher, Mr. Chaffey, Mr. and Mrs. Grace, Dr. Penrose, Mr. Waddington, Mr. Wallace, Mr. Wells.

F.G.P.

ENTOMOLOGICAL NOTES FOR 1918.

By W. Parkinson Curtis, F.E.S.

January 23.—*Apis mellifica* was first moving.

February 17.—At Canford *Hybernia leucophaearia* and *Phigalia pedaria* appeared.

February 18.—*Vanessa polychloros* seen at Poole, this first at that locality since 1893.

March 10.—*Gonepteryx rhamni* was seen.

March 21.—A very hot day produced at Parkstone *G. rhamni, Vanessa io, Aglais urticae, Chimbache fagella* and *Eupithecia pumilata.*

March 24.—*Brephos parthenias* was abundant at Canford, and *Micropteryx semipurpurella.*

March 31.—Mrs. Curtis caught *Asphalia flavicornis* at Canford.

April 6.—*Pieris rapæ* appeared.

April 7.—*Dichonia areola* was abundant at Canford.

April 13.—I saw *Brephos parthenias* in Chine Crescent Road, Bournemouth. One hardly associates this insect with the centre of a populous town.

April 19, 21.—Comparatively heavy snow.

April 24.—*Cyaniris argiolus* observed, and *Pieris brassicae.*

April 28.—*Tephrosia bistortata* emerged and *Saturnia pavonia* was flying at Canford.

May 5.—At Canford a fine male *Notodonta trepida* at rest. *Dasychira pudibunda* and *Tephrosia punctularia* were also out.

May 12.—*Boarmia cinctaria, Phytometra viridaria* and *Lophoteryx camelina* all appeared at Canford, whilst on May 19 *Euchloe cardammis, Taeniocampa stabilis* and *Panolis piniperda* were evident as well as *Drepana falcataria, Macrothylacia rubi* and *Arctia villica.*

May 20.—Watched *Arctia caja* larva doing 13 feet in 1½ minutes. If *caja* steps one-eighth of an inch (a generous estimate) and man steps 3 feet, a man should walk 27 miles an hour to equal the relative pace of *caja*

May 26.—*Pararge megaera* appeared and on June 2 *Diacrisia sannio* and *Acronycta psi.*

June 9.—*Hipparchia ianira* had appeared.

June 12.—I took a fine male *Stauropus fagi* at rest at Parkstone.

June 13.—*Bryophila perla* was taken at Bournemouth, an extraordinarily early date.

June 16.—*Coenonympha pamphilus* appeared.

June 17, 22.—Was very bad weather.

June 24.—*Angiades sylvanus* was out.

July 6.—*Acrobasis zelleri* was abundant at Canford, a new locality for this insect.

July 29.—I saw a very unusual collection of insects on a single privet bush in Bournemouth Square :—

Argynesis adippi
Pyrameis cardui
Pieris napi
Pieris rapae
Pieris brassicae
Hipparchia semele
Epinephele tithonus
E. ianina
Cyaniris argiolus
Aglais urticae
Macroglossa stellatarum
Pyrameis atalanta

A round dozen speaking volumes for the abundance of insect life in the country.

August 4.—At Swanage, *Strenia clathrata* and *Vanessa polychloros* were taken and *Zizera minima* was observed.. *Lasiocampa quercus* was very abundant. *Rhodophœa advenella, Ririla sericealis* and *Chloroclystis coronata* were also taken.

August 9.—*Ennomos alniaria* was taken at Swanage.

August 23.—*Catocala nupta* was taken at Parkstone.

Here the record ends as Mr. Curtis had neither time nor opportunity for further observation.

Geographical Section.

Chairman : Claude Lyon.
Secretary : W. J. Woodhouse, A.C.P.

It gives the Chairman great pleasure to be able to report that the Section "carried on" well during the last season in spite of the War. Several interesting lectures were given in the Society's Room during the Winter Session. Special reference may be made to the important lecture on "Some Regional Capitals in England," by Mr. C. B. Fawcett, B.Litt., M.Sc., F.R.G.S. Mr. Fawcett selected Birmingham as a good example of what he meant by a regional capital. That city is the focus of the metal industry of the district; a great railway centre; an important educational centre, with one of the "most vigorous of the younger universities"; and the headquarters of many notable societies and associations, engaged in investigations and researches of various kinds. The value of such lectures now that the Peace Delegates are engaged in delimiting frontiers and arranging regional and other capitals is self-evident.

Among the lectures of a more general character the Chairman would like to mention the one on "East Dorset in Saxon Days," by the Rev. A. C. Almack, M.A., Rector of Blandford St. Mary; and the one on "The New Forest: Its History and Natural History," by the Rev. J. E. Kelsall, M.A., Rector of New Milton. Each of these lectures threw most valuable light on the subject with which it dealt. As Russia has attracted so much attention the Chairman thought that a lecture on "The Crimea," describing the war of 1854-6, illustrated by slides from photographs taken by himself would be of interest, and he ventures to say that, judging from the way the lecture was received, he was right in his surmise.

As the continuance of the War precluded the use of vehicles for long excursions during the Summer Session, the Chairman decided to try the experiment of "Afternoon Walks," and these appear to have given pleasure to many members, combined as the walks were with a series of lecturettes. The first of these walks was through the Bournemouth Upper Gardens, when Mr. Backhouse, F.R.H.S., kindly described the trees and shrubs; Dr. de Castro, M.R.C.S. (Eng.) gave an excellent lecture on the growth of Bournemouth and the laying out of the grounds; and Dr. Penrose, M.D., F.R.C.P., F.Z.S., M.B.O.U., concluded with a charming account of the birds of the district. The second walk was through Branksome Park to Shalimar, the home in the woods of Mr. and Mrs. Lyon, visiting on the way the beautiful grounds of the "Wick," by the kind invitation of the owner, Mr. Sturdy, who welcomed the members himself. Three lecturettes were given on this occasion: the first, an excellent resumé of the history of Poole, by the Rev. H. Shaen Solly, M.A.; the second, an educational lecture by Mr. Woodhouse, A.C.P., which led to a most interesting discussion that was evidently much appreciated; and the third, a most amusing entomological lecture by Mr. J. Neale, B.A., illustrated by a number of striking coloured drawings by the lecturer.

The Chairman would like to record the satisfaction that he feels at the happy termination of the terrible struggle that the country has had to sustain for more than for four years. The advent of Peace will enable the Bournemouth Natural Science Society to extend its useful work in various directions. The coming visit of the British Association to Bournemouth will be a great event in the history of the Society, and should prove a stimulus to all the sections, and to none more so than to the important Section of which Mr. Lyon has the honour to be the Chairman.

C.L.

Geological Section.

CHAIRMAN: HENRY KIDNER, F.G.S.
SECRETARY: GEORGE GRACE, B.SC., A.R.C.S.

The Session began, as far as the Geological Section was concerned, with the retirement of Mr. Munn Rankin, M.Sc., B.Sc., from the chairmanship and the appointment of Mr. Kidner as his successor. At the first meeting (November 21st), Mr. T. J. P. Jeffery opened a discussion on "The Origin of Mountain Folds," to which Dr. Gosse, Mr. Rankin and the Chairman also contributed.

At the December meeting Mr. Rankin gave a lantern lecture on "The Deposits of Coal and Iron in the Franco-German Borderland," a subject of economic and strategic as well as geological interest. In January there were two meetings held in conjunction with the Botanical and Archæological Sections respectively. At the first Mr. Rankin lectured on the "Origin of the Bournemouth Flora," and, at the second, the Chairman took as his subject "Along the Dorset Heights in the track of Early Man." In April Mr. G. Brownen, F.C.S., lectured on "The Local Artesian Boring to the Lower Chalk," and on May 11th the President of the Society, Sir J. J. H. Teall, F.R.S., gave the lecture on "The Evolution of Igneous Rocks," which is reported at length elsewhere in this volume.

In August the Chairman conducted an excursion to Chewton Bunny and Barton Cliffs, and, at the visit to Honeycombe Chine, Mr. Rankin gave a description of its geological features.

The Section was well represented at the Reunion in June as will be seen on reference to the Report of that very successful gathering.

Hon. Ed.

Photographical and Record Section.

CHAIRMAN: R. Y. BANKS.
SECRETARY: EDWIN DODSHON, LL.B.

At the opening meeting the Chairman showed a number of record slides obtained during the preceding year, and some further experiments in Colour Photography, including two colour-slides by Members of the Section who won prizes during the year. In February slides made by the Chairman from negatives belonging to the Philpott collection were shown at a joint meeting of this and the Geographical Section. At other meetings the Chairman lectured on "Photographic Memories of Italy," and the Secretary on "Markinfield Hall and Fountains Abbey," each of these lectures was copiously illustrated by slides. At the end of the Winter Session the usual Exhibition of the "Amateur Photographer" prize slides was well attended, and, apparently, much appreciated. Owing to travelling difficulties the summer excursions were fewer than usual, but small cycling parties visited Sopley and other places accessible by "wheel." The stringent regulations of D.O.R.A. have much interfered with photographic work, but, in spite of these and other war-time difficulties, the Section has "carried on."

R. Y. BANKS.

Physical Section.

CHAIRMAN: HUBERT PAINTER, B.SC., F.C.S.
SECRETARY: MISS MARCIA PENROSE.

The five meetings of the Section were all well attended. The Chairman's lecture on "Soap" might be regarded as a continuation of the series on important articles of human consumption reported in Volume IX. The Rev. L. Winther Caws made the difficult subject of "Wireless Telegraphy" exceedingly interesting, and a large number of striking and brilliant experiments were shown by the Rev. L. T. Garland and Mr. Woodward. Mr. Cooke's lecture on "Dust" was excellent. Mr. Tyrrell's paper on the composition of the local waters is printed in the "Selections from Lectures and Papers," and should, like Mr. Brownen's paper in Vol. V. on the Chalybeate Spas of the Bournemouth Cliffs, prove useful for future reference.

H.P.

Zoological and Microscopical Section.

CHAIRMAN: F. G. PENROSE, M.D., F.Z.S.
SECRETARY: H. B. WELLS.

On December 13th a Lecture was given on "The Colour of Insects," by Mr. Geo. Grace, illustrated with a beautiful series of lantern slides which had been coloured by Mrs. Grace.

The two Lectures by Mr. Goodall on Gnats and Mosquitos have already been referred to under the Entomological Section.

On February 20th there was a Microscopical Meeting, at which the following members exhibited and explained the slides.

Mr. Edwards,
Captain David Griffiths,
Mr. Wells,
Mr. Taylor,
and the Chairman.

On April 17th Dr. Gosse gave a most interesting account of the Life History of the Oyster.

At the Reunion in June there were various exhibits, including selections from the Batley Collection of Birds' Nests and Eggs, which were demonstrated by Mr. W. Parkinson Curtis and his brother, Mr. E. H. Curtis.

An exhibition of the Marine Shells of the neighbourhood, collected and arranged by Mr. Belcher.

An exhibition of Autochromes, showing wild birds in their natural surrounding, by Dr. Penrose.

Dr. Penrose demonstrated, on behalf of Mr. Goodall, a series of Mammalian skulls, which the latter gentleman, who was unfortunately prevented from being present himself, had kindly lent to show various types of Dentition.

Mr. Neale gave a short lecture on the Colour of Beetles.

It may be legitimately claimed that the re-union was a great success, and that the Sections concerned with the Biological subjects, were fully represented.

EXCURSIONS.

There were no excursions confined to the section, but several members of the Section joined in the General Excursion on the walk through the Bournemouth Pleasure Gardens. After the tea the Chairman of the Section gave a short address on the Birds frequenting the Gardens.

F.G.P.

Natural Science Society War Savings Association.

At a special meeting held at the Society's Room on Saturday, February 2nd, it was resolved to form a War Savings Association in connection with the Society. The following officers were elected—

President—Sir Daniel Morris, K.C.M.G., J.P.
Chairman—Mr. Ralph Smythe, J.P.
Treasurer—Mr. R. Y. Banks,
Secretary—Mr. Herbert Malim, M.A.
Committee — The above-mentioned and Messrs. Brumell, Grace, Lyon, Painter, de Paiva, Penrose and Rankin.

£17 was subscribed on the spot and another £240 before the end of the month. Up to the end of September £1,084 4s. 6d. was invested in War Saving Certificates and £2,065 in bonds, making a total of £3,149 4s. 6d. Of this sum £41 17s. was invested by the society itself. At the close of the year the Association consisted of 45 members.

Although the war, as far as active hostilities are concerned, is now over, the need for saving is as urgent as ever. It is by wise economy in national, municipal and personal expenditure, coupled with vigorous and well directed energy devoted to the creation of fresh wealth, that the vast destruction of the war can be compensated, and a new and better prosperity attained. There will for a long time yet be room for this and similar saving associations.

A Selection from the Lectures and Papers given before the Society.

Report of a Lecture entitled

THE MISTLETOE.

Its Life History and Associations with Primitive Religion, Folk Lore and Superstitions.

(Delivered at Trinity Hall, December 15th, 1917.)

By SIR DANIEL MORRIS, K.C.M.G., J.P., D.SC., D.C.L., LL.D., F.L.S.

Chairman: Field Marshall Lord Grenfell, G.C.B., F.S.A.

After a few introductory remarks it was stated that *Viscum,* the Latin name for the mistletoe, was used by Virgil and Pliny, both of whom wrote interestingly about it 2,000 years ago. The specific name *album* is in allusion to the white berries. The common name mistletoe is said to be derived from *mist,* the German name for slime, in reference to the seeds being dropped after being devoured by birds. An alternative derivation is from *mistelta,* the old Saxon name for the plant. To distinguish the common mistletoe from other plants, with a similar habit, it is spoken of as the white mistletoe. The mistletoe is evergreen irrespective of the fact whether it is attached to a deciduous or an evergreen tree.

The general appearance of the plant is familiar to everyone.

The small green flowers appear in the forks of the branches. The pollen-bearing and the pistil-bearing flowers appear on different plants, that is, the sexes are distinct. It is hardly necessary to say that only the female plants produce berries. The latter are white and semi-transparent, of the size of a small pea. They contain a single seed covered with very glutinous pulp with one or more green embryos.

Dispersal of Mistletoe.

There is no doubt that the mistletoe owes its dispersal in the wild state to the agency of birds. The missel thrush, known in Hampshire as the Storm Cock, because it sings particularly loud and long before rain, is, probably, chiefly concerned. This bird devours the berries in winter with great avidity. The digested or partly digested seeds are dropped, after passing through the bird, on branches of trees on which it alights. The seeds, embedded in sticky slime, readily adhere to the branches and while still soft, or under the influence of rain, they are gradually carried to the sheltered or underside of the branch, where in a couple of months or so they germinate, and, if the conditions are favourable, ultimately develope into established plants. Usually it takes about four or five years before a mistletoe plant comes into flower. The flowering period, in the south, is from February to April. The berries ripen in early winter. The mistletoe is frequently cultivated in gardens for its interest and associations. It may readily be established by crushing the berries and placing them on the bark of apple trees. It is also obtainable from nurserymen growing on small trees. The two sexes should be obtained on the same or separate host plants.

Geographical Distribution.

The mistletoe is not common in this immediate neighbourhood in a wild state. In the floras of Hants and Dorset it is described as rare. In the southern and western parts of England it is fairly common except in Cornwall. It is found in scattered localities in the northern parts of England, and it is absent, altogether, from Scotland and Ireland. The mistletoe is met with in greatest abundance on apple trees in the cider-making areas in Worcestershire and Herefordshire and in oversea Brittany, whence large quantities, on the approach of Christmas, are sent to London and other large towns. The supply does not seem to be in any way diminishing.

The mistletoe has a wide distribution on the Continent, ranging from Sweden to the Mediterranean, and it is found also in the temperate parts of Asia. The Rev. C. O. S. Hatton informs me that mistletoe is found wild on poplar trees in Milton Glen, about half a mile from New Milton Station on the road to Wootton. It is growing in gardens and orchards at Beckley and Hinton Vicarage, and there are eight clumps, one over twenty years old and about 10½ feet in circumference, established on apple trees and on a red hawthorn, in the garden of Dr. J. A. Hosker at Boscombe. The Rev. E. F. Linton, the author of the "Flora of Bournemouth," informs me that at Edmonsham, near Salisbury, mistletoe is plentiful, even abundant; also in the adjoining parishes of Cranborne and St. Giles. In the county of Dorset mistletoe is reported in orchards at Mosterton, at Bradford Abbas, Pamphill, near Wimborne, and commonly met with in Cranborne Chase and Crichel Park.

Host Plants.

In this country the mistletoe is most plentiful on apple trees, both cultivated and uncultivated varieties, and next on poplars, except in the case of the Lombardy poplar, possibly on account of its upright branches. It is fairly common on hawthorn, sycamore, maple, Norway maple, lime, horse chestnut, mountain ash, and whitebeam. It is less common on elm, hornbeam, willow, Scots pine, Corsican pine, Lebanon cedar, larch, red horse chestnut, and sweet buckeye.

The comparative absence of mistletoe on pear trees is often remarked. Mistletoe on pear trees have, however, been observed at Belvoir Castle Gardens and at Bryngwyn near Hereford.

The most famous host plant of the mistletoe is undoubtedly the oak. It is really very rarely seen on that tree. In the whole of England there are probably not more than two or three dozen examples at the present time. There is no mention of a mistletoe-bearing oak in Dorset. The only Hampshire oak with a mistletoe, of which I have a record, is in Hackwood Park, near Basingstoke. The first notice of this appeared in the "Leisure Hour" in 1873. Through the kindness of the Rev. G. Sampson, of Ramsdell Vicarage, I have received two recent photographs of the tree bearing a bunch of Hampshire mistletoe. Last year Miss Ida Roper, F.L.S., was fortunate enough to discover a mistletoe on an oak in the Leigh Woods, overlooking the Somerset side of the Avon, near Bristol. In Elwes' and Henry's great work, "The Trees of Great Britain and Ireland" (1907), there is published a list of twenty-three trees on which mistletoe had been reported during the last fifty years.

Mistletoe in Ancient Religion and in Medicine.

The mistletoe has occupied a prominent position in ancient religion, and there are numerous myths, legends and superstitions associated with it.

It is mentioned by Professor Frazer that of all European trees none has such claims as the oak to be considered as pre-eminently the sacred tree of the Aryans. Its worship is attested for all the great branches of the Aryan stock. When the mistletoe was found on an oak it was the object of superstitious veneration all over Europe. It was worshipped by the Druids as we learn from a famous passage of Pliny, who said "The Druids, for so they call their wizards, esteem nothing more sacred than the mistletoe and the tree on which it grows, provided only that the tree is an oak . . they believe that whatever grows on the oak is sent from heaven . . on the sixth day of the moon a priest clad in a white robe climbs the tree and with a golden sickle cuts the mistletoe, which is caught in a white cloth." They believed that a potion prepared from the mistletoe would confer fertility and that the plant was a remedy against all poison. It was called the "all healer." With this belief of the Gauls and Britons as to the wonderful medicinal properties of mistletoe Prof. Frazer mentions a similar belief of the modern Ainos of Japan. Whatever may be the origin of these beliefs and practices concerning the mistletoe it is accepted that they have their analogies in the folk-lore of modern European peasants. One of the most interesting legends associated with the mistletoe is of Scandinavian origin.

The mistletoe is sometimes referred to as the Golden Bough. Perhaps the name may have arisen from the rich golden yellow which a bough of mistletoe assumes when it has been cut and kept for some months; the bright tint is not confined to the leaves but spreads to the stalks as well. so that the whole branch appears to be indeed a golden bough. A visitor to Brittany says great bunches of mistletoe are hung up in the villages and kept until June, "when the leaves become bright yellow."

In the olden days for Christmas decorations of churches, while holly, bay, rosemary and laurel were favourite plants, the mystic mistletoe was specially excluded, as it was regarded as about as inappropriate to the interior of a church as the celebration of the old Druidical rites within the sacred building.

Story of Ginevra.

Although only indirectly connected with the mistletoe, mention might be made of a tragic story first published by Rogers, in Italy, in 1822, of a young Italian bride who, playing hide-and-seek, hid herself in a large dower chest, in which she was held a prisoner and died. A similar narrative is given by Collet in his "Relics of Literature." A story of a like character has been current in this country for more than a hundred years, and it has been associated with many country houses in Hampshire and elsewhere. T. Haynes Bayley, who died in 1839, wrote a ballad on the subject called "The Mistletoe Bough." It was set to music by the English composer, Sir Henry R. Bishop.

One of the houses associated with the story is Marwell Old Hall, near Southampton, once the residence of the Seymours, and subsequently of the Dacre family.

Another was Bramshill Park, near Winchfield, the home of the Cope family.

In neither of these has it been possible to ascertain the truth of the tradition which is common in many countries and most difficult of investigation.

SOME ANALYSES OF LOCAL WATERS.

By A. J. TYRRELL, F.C.S.

(Read before the Physical Section, March 2nd, 1918.)

To commence with, it may be an advantage to consider briefly the two different ways in which hardness and other results of analysis are expressed. The old way, and a way still very much in use, is to state quantities as grains in the gallon, which is the same as so many parts in seventy thousand of water. To say that a water has a hardness of 10 degrees, for example, means that it contains 10 grains of calcium carbonate per gallon. In the other mode of stating results, 10 degrees of hardness stands for 10 parts of calcium carbonate, not in a gallon or seventy thousand parts of water, but in 100,000 parts of water.

A simple calculation shows that 10 degrees as grains per gallon correspond to 14.3 degrees expressed as parts per 100,000. Therefore it is insufficient to be told that a water is of 10, 15, or 20 degrees of hardness; we must also know whether this stands for grains per gallon or parts per 100,000. To convert the first into the second, divide by decimal 7; to pass back to grains per gallon, multiply by decimal 7. As "grains per gallon" are slowly disappearing simply as one of the many results of the advent of the metric system, and most analyses made to-day are expressed as parts per 100,000, it is obvious that an analysis so expressed has a much wider field for comparison.

Adopting this form of expression, the average total hardness of our water is just 15 degrees. In grains per gallon this will be 10½ degrees. This figure is the average of 15 determinations. The greatest hardness I have observed was on the 8th of last month (February, 1918), when it rose to 17½ degrees. The lowest—13.6deg.—I found on the 6th of last June. Just at present (March 2nd, 1918)the hardness is at the average value.*

There is no law of the country that says that waters shall not exceed such and such a degree of hardness, but when a company is being formed and is applying to Parliament for the necessary powers, local authorities may obtain the insertion of a clause in the Bill stipulating that the water shall be softened down to a certain degree and must not be allowed to exceed that hardness. I think that our water company are under such an obligation to soften down to 10 grains per gallon, which as parts per 100,000 is 14.3 degrees. This exceeds the average value found by only half a degree or so. It seems therefore that they are keeping to their undertaking, and that the complaints of the excessive hardness of the water are quite unjustifiable. In a moment we shall see that the inhabitants of Poole and of Christchurch and part of Southbourne, who are supplied by other companies, have more right to complain.

Our water owes its hardness to salts of calcium—the sulphate and the carbonate or, more correctly, the bicarbonate—and is almost completely devoid of magnesium salts. On boiling, nearly the whole of the chalk is precipitated, yielding a water the hardness of which averages 4.4 degrees, and is subject to less variation than the total hardness. This might have been expected, as any irregularity in the softening process affects the total hardness, but the amount of salts remaining after boiling are only affected by variations in the original water, and not by the ordinary lime softening process. The calcium sulphate remains throughout, and whatever the variable quantity of chalk present after softening may happen to be, all excepting about 1.3 parts is precipitated.

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*The average hardness yielded by weekly determinations extending from February 5th, 1918, to December 6th, 1918, is 15.6 parts of $CaCO_3$ per 100,000. The highest figure was obtained on October 4th, when it was 20.2deg. The lowest occurred on July 26th, and was 13.6deg.

The nitrogenous compounds in the water—free ammonia, salts of ammonia, organic or albumenoid ammonia, and nitrates—are present in sufficient small quantities to permit of the water being classified as one of high organic purity.

We consume a certain amount of iron with our water, but only to the extent of 7 or 8 parts in a hundred million, which is so low a value as to justify its being entered in reports as "a trace" and so dismissed. Small as this quantity is, however, slight but definite variations are noticeable.

Chlorine in the form of sodium chloride is present in much larger quantity, and keeps very constant. Of eight determinations, six give results of 1.8 parts of chlorine in 100,000 parts of water, and two give 1.85 parts per 100,000. A constant impurity such as this is valuable as it immediately reflects any radical change in the water at its source.

Compared with the water of other districts, the chlorine content of the local waters has the virtue of being strictly moderate. Some figures are :—

West Hants Water Company	1.4 parts Cl.
Poole Water Supply	2.4
The River Stour	1.6
Peaty waters from Hern (average)	1.6

Sea salt is carried inland by the wind, and probably finds its way into every one of the local waters, consequently what differences exist are possibly due to different proportions of the respective waters being collected on lands near the sea. This seems to be demonstrated by a comparison of the Avon water—which contains only 1.3 parts—with samples from the Bourne, which contains twice this amount just below Coy Pond, and still more just before the Square, which of course is nearer the sea.

A well at Wick contrasts with all the foregoing in containing 13.4 parts of chlorine—a quantity sufficient to condemn it instantly if one cared to dogmatise on the question of salt being an index to pollution. An amount of chloride much above the average for a particular district certainly *suggests* possible pollution, but all the conditions should be taken into account, and it seems from the situation of this well that it must receive water from higher lands which are subject to the full blast of the salty Southbourne winds.

This well, which is passed by the road-side as one walks from Tuckton Bridge to Christchurch Head, and is probably familiar to many people, is not easy to pronounce upon and is of interest on that account. It gives a clear yellow water. The hardness is quite of an average value, namely 17½, but the water is rich in dissolved organic matter, and nitrates and organic ammonia are high. Accompanying these objectionable impurities, however, is but a comparatively minute quantity of free ammonia—the chief constituent one looks to for indication of recent sewage contamination—and this added to the fact that the water remains beautifully clear after rains, showing that it undergoes good filtration by the soil, serves to pass it as a safe water. The low value for free ammonia accompanied by high organic ammonia indicates that the large amount of organic matter present is of vegetable and not of animal origin.

A water which contrasts with this in being of very high organic purity, and even surpasses our own, is the Poole water. This water is drawn wholly from a well in the chalk at Corfe Mullen, and without being either filtered or softened is pumped to different reservoirs for distribution, the chief of which is at Forest Hill. The hardness of this unsoftened water is 20½deg. against ours of 15deg., showing that others have more cause for complaint than ourselves.

The water contains more chlorides than ours to the extent of one-third, but it excels in containing less than one-half the organic matter and in being very low in nitrogenous compounds. It contains about twice the trace of iron present in the Bournemouth water. Altogether it is a water of excellent purity, and if the inhabitants of Poole are to be pitied for having a rather dirty town to live in, they are at the same time to be congratulated on the cleanliness of the water flowing in the mains beneath the streets.

Southbourne, Christchurch, New Milton and other localities around there are supplied by the West Hants Water Company. The whole of the water supply is drawn from the River Avon, and after passing through sand filters is pumped to various centres and distributed without being softened. Some is distributed from St. Catherine's Hill; another centre is the familiar water tower at Southbourne.

Comparing the hardness with that of our water, we have to admit again that we are the more fortunate. A recent sample possessed a hardness of over 21deg. against ours of 15deg. There exists no good reason why both this and the Poole water should not be softened down to our standard.

This water, being simply filtered river water, is not of such high organic purity as the Bournemouth water, though it is undoubtedly of high quality. The figures for organic matter and for the different nitrogen compounds are in each instance over double those for our water.

On warming a small quantity of this water in a corked flask and inhaling with the aid of a glass tube, I was interested to notice a faint and not unpleasant smell of fresh river weed.

The hardness of the water from the River Stour exceeds that of the Avon by about one degree, the average of three determinations being 22.1 degrees.

All the waters considered so far are chalky waters, and by virtue of their containing chalk they possess the power of neutralising a definite quantity of acid, which serves as a measure of the temporary hardness or of the potential alkalinity of the water. For instance, the average of 21 such determinations yields the figure 14.7 as representing the alkalinity of our water measured as parts of chalk in 100,000 parts of water, while for the Poole water the value is 19.3, and for the West Hants Company's water 19.4. Water from peat, however, contains organic acids, and so far from being able to neutralise acid, it can itself be neutralised by a solution of soda and its acidity so determined. As an example, a peaty surface water from Hern contained acid equivalent to one part of acetic acid in 100,000 of water, another from a bog spring there contained nearly 4 parts. Both were very soft, and of course any hardness would be permanent and certainly not due to calcium carbonate when the water is decidedly acid. The consideration of the properties of these waters is a matter of vital importance. Such waters are nothing less than dilute acids and passing through lead pipes would dissolve a considerable quantity of the metal and become highly dangerous although probably quite wholesome if taken at the source.

Many people believe that the salts in hard waters have a decidedly injurious effect on the health, and not a few enthusiastic dietetists distil every drop of water they drink, while others seek hard waters believing that the salts are beneficial and necessary. However, if we consult the best modern authorities, we shall find the opinion steadily gaining ground that the quantity and nature of the salts taken and the length of the period over which the consumption is spread makes it a matter of indifference to the health whether one drinks hard or soft water. The total solid residue from the evaporation of 250 c.c. of our water—an average example of a water—leaves but a filmy deposit over the bottom of the dish, 65 milligrams or one grain in weight. Calculating on the basis that a person consumes 2½ pints of the water daily in various ways, the salts so taken in one year amount to 4¾ ounces Av.

The task of taking a water sample for analysis is one that may fall to anyone, but few appear to know the correct procedure in collecting a sample of water. The most important point is to see that the bottle is clean beyond all suspicion. In the analysis of a water the first thing done is to look at the water, the second is to smell it, and on endeavouring to perform the second test I have known samples to smell of vinegar, whisky, and of coffee essence while the inefficient washing usually has left the label on the bottle to confront one and confirm the evidence of the sense of smell. Samples in medicine bottles rarely fail to possess one of the smells characteristic of physic.

So the bottle should be scrupulously clean and should possess a glass stopper, but if this latter is impossible, the cork used should be perfectly new. If fluids are used to clean the bottle, such should consist only of mineral acids which must be fastidiously rinsed out afterwards.

People sometimes think that, given half a pint of water, a few tricks can be performed and the figures of a complete analysis obtained. The substance sought for in the analysis are present in such minute quantities that this volume of water can only serve for determining the hardness, and for anything like a moderately complete analysis, nothing less than a litre suffices; moreover, even this is inconveniently small and a "Winchester quart" (half an imperial gallon) should be regarded as the most suitable quantity. In searching for some salts for certain purposes as much as three Winchesters may be necessary.

In filling the bottle no intermediate vessel should be used. The water should be allowed to flow from the tap straight into the bottle taking care that it does not wash one's hand on the way. If being taken from a tank, a river, or some similar source, the bottle should be plunged below the surface and the stopper removed now and not before so as to prevent any scum entering. Before actually taking the sample, the bottle should be rinsed several times with the water, and filled to overflowing at least once during the operation so as to drive out any possible vapours which are able to survive many ordinary rinsings. Further, some thought should be given to the act of emptying the bottle after each rinsing, for as water goes out air goes in, and therefore to hold the inverted bottle close over a foul sink, for example, would be very objectionable. The bottle being filled to within an inch of the stopper, a clean piece of linen should be immediately tied tightly over the latter and the sample stored for as little time as possible before analysis.

In collecting a sample for bacteriological examination it is necessary to take certain other precautions in addition to the foregoing, such as sterilising the tap, etc.

The fullest possible particulars of the water and its source should always accompany a sample.

REMINISCENCES OF EGYPTIAN EXPLORATION.

Report of a lecture by

FIELD-MARSHALL LORD GRENFELL, G.C.B., G.C.M.G., LL.D., F.S.A.

(Given before the Archæological Section, March 9, 1918.)

On Saturday, March 9, 1918, Field-Marshal Lord Grenfell, F.S.A., gave an address to a crowded audience in the Society's Room, entitled "Reminiscences of Egyptian Exploration.' He went back to the time when Egypt was threatened with an invasion from the troops of the Mahdi, and a large force of Egyptian soldiers had to be kept to guard the frontier, then at Assuan, from a possible advance of the enemy. Partly to find occupation for these native troops, Lord Grenfell, who was then Sirdar, set them to dig trenches which ultimately resulted in most interesting discoveries. Assuan is the market town of Nubia, and perhaps the most interesting town on the Nile. On the east bank one of the oldest Mohammedan cemeteries runs up to the granite quarries, with gravestones, inscribed in Cufic characters, some of the first century of the Hegira, of friends of the Prophet. On the left bank a sandy valley leads up to the ruins of a very old Coptic convent of the VI. century. Egyptian, Ptolemaic, Roman, and Arab remains had been found at Assuan, but no tomb of ancient Egypt had been discovered. Lord Grenfell first employed his troops in digging a deep trench parallel to the Nile in order to find traces of communication between the river and the high cliffs on the west side overlooking the Nile. After a week's labour they found, buried beneath the sand, an ancient stone staircase of a very curious nature. There were steps on either side and in the middle a polished flat stone shaft evidently used for dragging up the mummies.

This staircase was followed up and eventually led to the rock-cut entrance of a large tomb of the VI. Dynasty. This was filled with fragments of coffins which had fallen to pieces, earthenware pots and memorial tablets, which took a battalion of Egyptian soldiers some weeks to clear away. Further finds followed. The most interesting tomb was a Tomb Temple of the VI. Dynasty, in one half of which a shaft leads to a tomb of a man called Sab-ben, an officer in the service of King Pepe, the inscription runs: " Sab-ben the Prince, Inspector, President of the South Ministrant, President of the Countries filling the heart of the king of the South." He stands holding a sceptre in his hand, his face painted red and his hair black. The other tomb was made for a man called Mechu, of similar dignity and rank. The inside wall of the tomb is inscribed with the attributes of the deceased; on another portion of the wall three men pour libations before Mechu, who leans heavily on a stick, one leg is bent and the knee enlarged, showing that he was probably lame. The whole hill is honeycombed with burial places, and twenty-six tombs in all were opened. A most beautiful tomb of the XII. Dynasty was excavated here. The entrance is cut in the solid rock, which is smoothed and polished. It has an outside chamber and a narrow passage leading to another chamber. In the passage was placed the bearded mummy figure of Osiris carved in stone. In the second chamber is a beautifully decorated altar, with the figure of Se-renput, the owner of the tomb, wearing a tunic, necklace or collar, and white sandals tied over the ankles. Above him is inscribed " The Prince Se-renput, Triumphant Lord of devotion, son of Sati-hetep, Triumphant Lady of devotion."

The clearing of this tomb occupied six weeks, during which tons of sand were thrown out. In another tomb lay a well-made mummy in a black painted but uninscribed case, at its head stood a most curious model of a granary, this contained several compartments still filled with grain, with an inscription of the particular grain over each door. This was useful to Egyptologists as it showed the correct hieroglyphic signs for different grains. On the floor of the granary stood a man with a basket. This curious model and that of a boat found here are now in the British Museum. Another boat and a model in wood of women kneading bread formed part of Lord Grenfell's collection. When this collection was sold, the boat and the kneading women were bought by the late Mr. MacDougal, and form part of the treasures which he placed on loan in the room of the Society. Lord Grenfell proceeded to speak of various objects which had formed part of his collection. The most important one was a head, in black basalt, probably of Amenophis III., of an early Dynasty, which he had found in a tomb at Assuan. It was one of the finest and most artistic pieces of Egyptian sculpture, being the sole remains of a seated figure of the King, which was probably smashed to pieces during the Persian or some other invasion, and had been sold for £260 at the sale of his collection. He also spoke of the large boat found in the VI. Dynasty tomb which was intended to convey the deceased from the east to the west bank of the Nile.

He described the origin and period of the Ushebti figures. Herodotus tells how the death of a Scythian chief was followed by the slaughter of his wife and servants so that they might accompany him to the next world. The Egyptian was satisfied to reproduce in effigy those for whom he cared and whom he wished to attend him in Amenti or Paradise, including servants, relatives, boatmen, workers in the field, and the whole establishment he considered necessary to his future life. These were reproduced and hidden not only in the tomb, but in various other places, so that should his tomb be desecrated, still the reserve elsewhere would ensure what he needed in the future life. So, too, with all objects of luxury or necessity which the "Ka" would desire to have at hand, including his food and drink. Egyptologists believe that the essential part of this ritual dates back as far as the Memphis period.

As a rule, these statuettes did not exceed 8 to 12 inches in height, though a few are larger. They are of different materials, some of wood, others of limestone or granite, but for the most part they are made of terra cotta and covered with a green or blue enamel and called Egyptian porcelain. They are mummy-like, their hands crossed upon their breasts; hoe and pick are on their back, and a sack full of grain hangs from their shoulders. This is explained by a picture in chapter 90 of the Ritual which shows the dead tilling, sowing, and harvesting in the fields of the other world. The text calls these little figures "Ushebti" or

Respondents, from the word "ousheb," to answer. Even the objects painted on the wall could be used by the Ka, and therefore we find bread, eggs, vases of water, and a variety of luxuries ornamenting the tombs.

The Ushebti of Ptamos is one of the most perfect examples in style and colour. A large majority of the faience Ushebti are in blue, a limited number are in white, the inscriptions are generally painted in manganese purple. The XX Dynasty was celebrated for the beauty of its turquoise faience, and the most beautiful examples were found at Tunah. They are frequently decorated with the lotus and inverted papyrus reeds. In Major Myers' collection, at Eton, the middle band is divided into six panels in each of which a king or prince is slaying an enemy whom he had vanquished. The king stands brandishing a mace and the prisoner is kneeling. The colour is the very finest turquoise blue. Others in the British Museum are of a deep indigo blue.

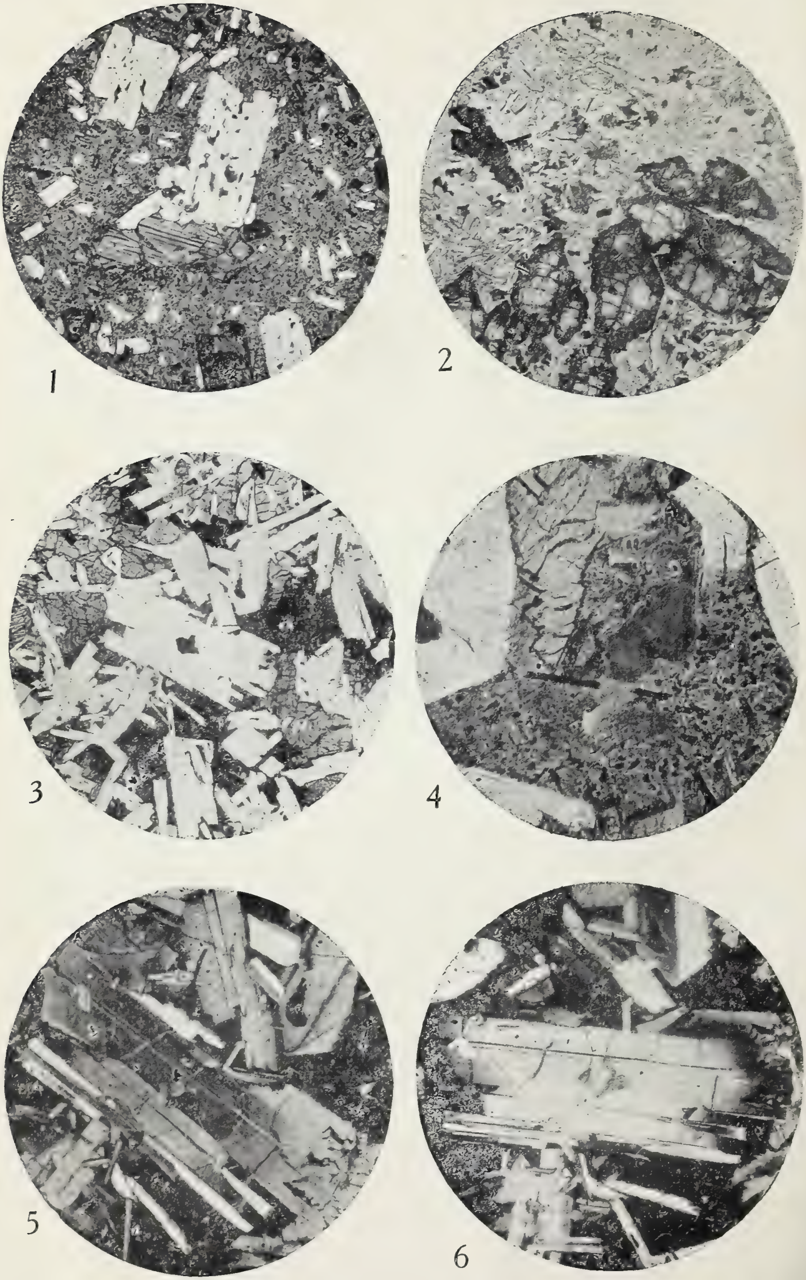
The objects found with the Ushebti figures include small vases for Kohl used for blackening the eyes, the tools of the shoemaker and other artizans, the jewels of women and three fine pectoral ornaments of gold plate inlaid with precious stones, bracelets, rings, and other ornaments. Children's toys are also found, dolls and balls of blue and white porcelain. Various amulets, too, occur in large numbers.

An interesting fact is that in pre-historic times the hardest materials were wrought, basalt, zeolite, and porphyry. In later dynasties serpentine and coloured limestone were used. In the XII Dynasty alabaster was employed and the most beautiful shapes were executed in it. Amulets in the Old Kingdom were usually made of carnelian or ivory, and represented the hand, the eye, a lion's head, a frog, or a bee. In the Middle Kingdom silver or electrum was usually employed. In the New Kingdom amethysts were introduced and in the XXVI. Dynasty dozens are found on the same body. Beads were used from pre-historic times and were made of quartz, amethyst, agate, carnelian, turquoise, lazuli, and various glazes. Better beads are more usual in pre-hisoric times. From the XVIII. Dynasty to the Roman period glass beads were used.

Lord Grenfell showed a portrait in coloured wax found with others at Eckmine, some of which are exhibited at the National Gallery. This from his own collection was probably by a Greek artist about 150 A.D. and originally took the place of the conventional head modelled on mummy cases in earlier periods. Other objects from the collection, now the property of the Natural Science Society, were shown and explained.

BRITISH MUSEUM NATURAL HISTORY

PLATE V.



MICROPHOTOGRAPHS OF ROCK-SECTIONS.

Report of a lecture entitled

THE EVOLUTION OF IGNEOUS ROCKS.

By SIR JETHRO J. H. TEALL, M.A., D.SC., LL.D., F.R.S.

President of the Bournemouth Natural Science Society.
(Delivered before the Geological Section, May 11, 1918.)

The President began by pointing out that although igneous rocks differ widely in composition the differences are such as to suggest a sort of blood relationship or consanguinity; and that the idea had arisen that the rocks of special districts, and even igneous rocks as a whole, have a common origin. He proposed to consider the subject with reference to two great groups—the andesites and the basalts—which, taken together, far exceed all other rocks that have reached the earth's surface from below. He would deal first with andesites, not because they were the most important, but because they illustrated in the simplest manner a principle of great significance in relation to the origin of petrographical species.

In 1902 a great eruption of Mount Pelée, an andesitic volcano in the island of Martinique, took place, resulting in the destruction of St. Pierre. Three kinds of solid material were formed—ashes, bombs, and a mass of rock which first rose as a dome in the centre of the old crater in a semi-molten condition. A few months after the first eruption, the top of the dome opened and some nearly solid rock was squeezed out as one may squeeze oil paint from a metallic capsule. It was sufficiently solid on the exterior to hold together, and so rose vertically, forming a "spine." In all three kinds of solid material crystals occurred, and they were alike in every respect, but the matter with which they were associated differed in the different kinds. In the ashes it consisted of minute fragments of glass; in the bombs and in the rocks of the dome and spine it varied from a glass to a mass almost entirely composed of minute crystals, thus proving that the larger crystals had been developed in the magma before eruption, and that the glass and smaller crystals, which had formed during or after eruption, represented the mother-liquor left after the separation of the larger crystals. Very little lava of the ordinary kind was formed. The magma, with its included crystals, was mostly blown into the air by the violent escape of gases and scattered far and wide. But large volumes of precisely similar material had flowed as lava, both from ancient and modern andesitic volcanoes in various parts of the world; as for example, in the Cheviot district in Old Red Sandstone times.

The speaker then described the chemical composition and microscopical structure of a lava from the Cheviot Hills which agreed in composition with the material erupted by Mount Pelée, and showed that by comparing the composition of the rock as a whole with that of the matrix in which the larger crystals are embedded it was possible to establish the following general law: progressive crystallisation in an andesitic magma, consolidating under the conditions which prevailed at Mount Pelée in 1902 and in the Cheviot district in Old Red Sandstone times, produces a mother-liquor richer in silica, poorer in lime, iron-oxides and magnesia, and richer in soda and potash (especially potash), than the original magma. He then pointed out that the Cheviot lavas are traversed by dykes of quartz-felsite—a rock which agrees very closely in composition with the matrix of the andesite—and that this succession in time can be explained if we suppose that the quartz-felsite represents the mother-liquor of the andesitic magma squeezed out, or separated in any other way, from the crystals after a certain amount of crystallisation had taken place in the underground reservoir from which the earlier-formed lavas were supplied. This view was confirmed by an examination of that portion of the underground reservoir, consisting of granitic rocks, which had been exposed by denudation in the central mountain group. The theory of progressive crystallisation, or crystallisation-differentiation, as it was now generally called, co-ordinated a number of apparently disconnected facts and thereby acquired a very high degree of probability. He had formulated the theory for the Cheviot district in 1885. (See pl. v. fig. 1.)

Basalt was considered from the same point of view. Some account was given of recent work in Hawaii, and especially at the remarkable crater-lake of Kilauea. It was pointed out that the dominant rock in Hawaii is an olivine-basalt in which olivine was the first mineral to form; and that by the sinking of the heavier olivines in the mother-liquor many of the other and less abundant varieties of rock occurring on the island could be accounted for. But it was also pointed out that crystallisation in basaltic magmas does not always follow the same course; that, in some cases, iron-oxides and magnesia, instead of separating out in olivines during the earlier stages, become concentrated along with alkalies in the mother-liquor, and so may give rise, on further differentiation, to soda-felsites and rocks, rich in olivine and magnetite. (See pl. v. figs. 2-6.)

The speaker then proceeded as follows:—

In a basalt from Carnmoney Hill, near Belfast, a plagioclase felspar, not olivine, appears to have been the first mineral to form—I say appears because there is at least a possibility that olivine may have been formed and subsequently dissolved—then augite followed, and lastly interstitial matter. The early felspars are not homogeneous as they frequently are in olivine-basalts. They are zoned and the outer zones are richer in soda than the inner ones. This proves that during the growth of the felspars the magma was becoming richer in soda. At the same time it was evidently becoming richer in iron and magnesia for these constituents do not enter into the composition of felspars, and this, coupled with the fall in temperature, led to the formation of augite. Finally, the interstitial matter consolidated. It occurs in two forms; as a dark brown glass and also as an aggregate consisting of rods of iron-ore, microlites of felspar, granules of augite, and a clear substance which cannot be definitely identified. The brown glass probably represents the interstitial matter undifferentiated. We have no satisfactory analysis of this interstitial matter, but very similar basalts occur in Franz-Joseph Land, and while preparing a description of them in 1897 I isolated and analysed the palagonite which represents the interstitial matter of one of these rocks. Neglecting the water, its composition expressed in minerals corresponds very closely with a mixture of 40 per cent. of the soda-felspar (albite), 22 per cent. of magnetite, 28 per cent. of olivine, 4 per cent. of hypersthene, 6 per cent. of the lime-felspar (anorthite). If a further differentiation had taken place soda-felsite and a rock essentially composed of olivine and megnetite might have been formed.

"It follows from what has been stated that progressive crystallisation in basaltic magmas produces different results under different conditions of consolidation. What is the cause of this difference? Some very important experiments on the consolidation of artificial silicate-magmas have been carried out during the past decade in the Geophysical Laboratory in Washington. By modern appliances it is now possible to subject molten silicate magmas or solutions—igneous rocks are merely frozen solutions—to high temperatures, to measure the temperature at any stage as it falls, to maintain it at a definite point for any reasonable length of time, and to examine the crystals present in the mass at any temperature by suddenly cooling the melt. It has been proved that in artificial silicate magmas, more or less allied to basalt, the ultimate result when the rock is entirely composed of crystals, depends not only on the composition of the magma but also on the rate of cooling; that with very slow cooling any mixture of a certain pyroxene (diopside) and a plagioclase containing albite and anorthite in equal proportions (labradorite) will consolidate as labradorite and pyroxene at 1200° C and the felspar will be homogeous; that with more rapid but not too rapid cooling the felspars will be zoned with the central parts richer in anorthite than the margins, and that a mother-liquor approaching albite in composition will be formed; and further that with rapid cooling to 1200° C followed by crystallisation at or just below that temperature the same result as that obtained by very slow cooling will be reached. It has also been proved that olivine in certain mixtures and with certain rates of cooling will be formed in the earlier stages and subsequently redissolved.

"These important experimental researches suggest that the differences between the olivine-basalts of Hawaii and many other localities, and the non-olivine bearing basalts of Carnmoney Hill and Franz Joseph Land are due to differences in the rate of cooling.

"We have now considered to some extent two groups of volcanic rocks—the andesites and the basalts—and we have seen that the principle of progressive or fractional crystallisation, coupled with the separation of the earlier-formed crystals from the mother-liquor, will account for many of the variations seen in each of the two great groups, and also for some rocks, such as quartz-felsite and olivine-rocks, which do not belong to either. Petrological work for some time past has had in view the construction of a genealogical tree in which the leaves shall correspond to the rocks as we see them, the twigs and branches to the various magmas that have been formed during the evolutionary process, and the trunk to some primordial magma. By starting with andesitic and basaltic magmas we have endeavoured to construct some of the leaves of this genealogical tree, and, if it is ever to be completed, I think it will have to grow mainly in this way. Dr. Bowen, of the Geophysical Laboratory in Washington, in a most valuable paper, has suggested that basalt may be the primary magma; but into that question I do not propose to enter. Even if we accepted his view the inevitable question would arise, 'what is the origin of this magma?' and we should thus reach the border-land of geology and cosmical physics—a somewhat perilous country for the geologist to travel in, and one in which he may easily be led astray, as, indeed, has happened more than once in the past. Still, I will trespass in it for a moment. Dr. Emmerson Reynolds, five years ago, placed a stepping stone on which it is safe to stand for a moment and look ahead.

"It is perfectly legitimate to regard igneous rocks as being mainly composed of oxides; but there are many reasons for believing that oxygen is absent from the interior of the earth, which may consist of concentric shells of varying composition, with heavy metals, such as iron and nickel, forming a large portion of the interior, and elements of lower atomic weight, such as silicon, aluminium and calcium, forming outer shells. From certain theoretical considerations Dr. Reynolds was led to ask himself the question whether some at least of the alumino-silicates which enter so largely into the composition of igneous rocks may not be fully oxidised products of silicides, formed at high temperatures below the oxidised crust of the earth. In the attempt to throw light on this question he effected the synthesis of the lime-felspar, anorthite, by an entirely new and most suggestive method. By first fusing together silicon and aluminium and then adding calcium, he obtained a compound or alloy in which these elements were associated in the same proportions as in anorthite, and then by passing moist oxygen over this compound at a low red heat he produced typical anorthite. This novel synthesis opens up a fascinating field for speculation as to what would happen if water and oxygen gained access to a highly heated zone of silicides which may form a shell below what we ordinarily speak of as the crust of the earth.

"With this slight digression into a field which lies beyond the domain of geology I will conclude by reminding you that my main object has been to emphasize the importance of fractional crystallisation as a factor in the evolution of igneous rocks."

The lecture was illustrated by lantern slides.

Explanation of Plate V.

Fig. 1. Hypersthene-angite-andesite. Cheviot Hills. Ordinary light. Mag. 30.

The larger constituents are labradorite (colourless), hypersthene (grey with dark patches due to alteration; section of crystal on lower margin), and augite (grey with parallel lines representing cleavage planes; fragment of crystal near centre of figure). The groundmass or matrix contains small felspars, grains of augite, etc., and a considerable quantity of glass which can only be distinguished under a higher power.

This rock is of Devonian age, but it is a common type in Tertiary and recent volcanoes, especially those surrounding the Pacific Ocean.

Fig. 2. Olivine-basalt. Ardtornish, Isle of Mull. Ord. light Mag. 15.

Group of olivine-crystals partially altered to serpentine along margins and cracks (lower part of figure). Augite in irregular patches (pale grey), labradorite (colourless) and iron ores (black). Similar rocks are common in the central portions of the Pacific.

Fig. 3. Basalt, Carnmoney Hill, near Belfast. Ord. light Mag. 15.

Felspar (colourless), augite (grey), and interstitial matter (dark).

Fig. 4. Portion of same slide more highly magnified to show the character of the interstitial matter. Ord. light Mag. 45.

The interstitial matter occurs partly in the condition of brown glass (centre of figure) containing the iron-oxide in solid solution, and partly in the form of an aggregate consisting of rods and grains of iron-oxide (black), microlites of felspar, etc., embedded in a colourless substance probably rich in soda.

Fig. 5. The large felspar represented in Fig. 3 more highly magnified. Polarised light. Mag. 30.

Regarding the figure as a map the nicols were crossed so that their shorter axes lie N-S. and E-W. In this position the centre of the crystal is dark and the margin light. The crystal is seen to be twinned and zoned with certain parts slightly displaced.

Fig. 6. The same after rotating the stage of the microscope so that the centre is light and the margin dark. The optical characters revealed by rotating the section between the crossed nicols and measuring the angles of extinction show that, during the growth of the crystal, the composition of the successive layers changed, but not continuously, from pure or nearly pure anorthite to a felspar (andesine) containing from 60 to 70 per cent. of albite.

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